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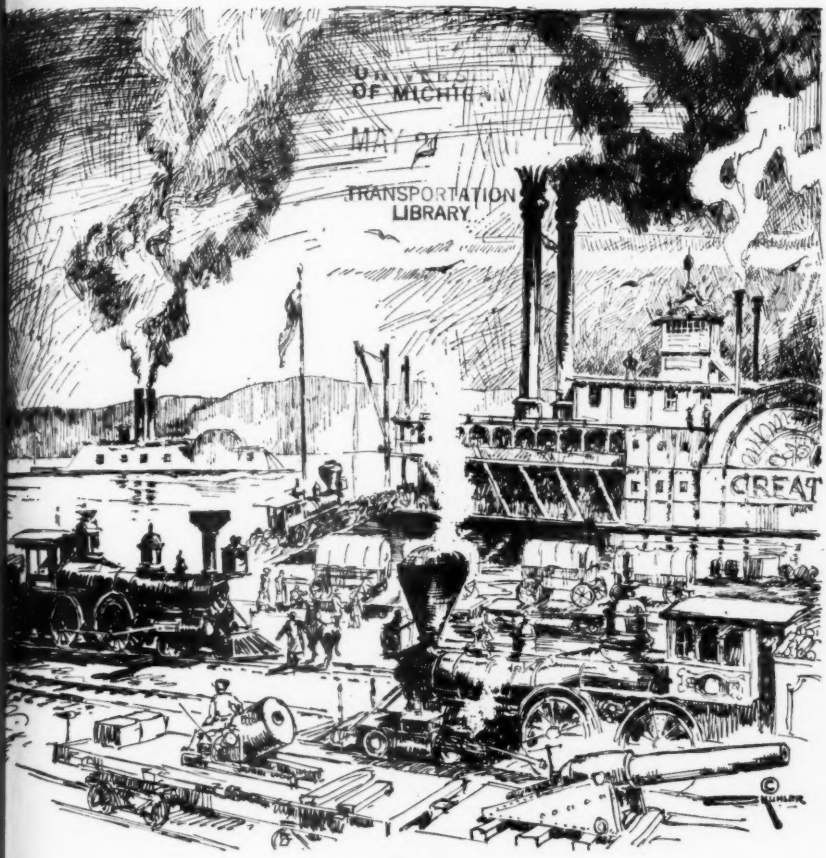
The Railway and Locomotive Historical Society

BULLETIN No. 104



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THE RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY

APRIL 1961

BULLETIN No. 104

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We are approaching the centennial of the war between the states and, during the next four years, there promises to be many books on the subject including those on railroads and the part they played in the conflict. One of the most exposed of our northern railroads was the Baltimore & Ohio. It was not only an east and west carrier but it brought the Cumberland coal to Baltimore for the use of our Navy. The trials and tribulations in attempting to keep the property in operation through the destruction of bridges and track was bad enough but to have one's equipment deliberately stolen and carted off to Confederate lines was unique in many ways, yet that happened to several of the B & O locomotives. Altho' Mr. Burns is a newcomer to the ranks of our contributors, he has spent no little time and effort in research work and has presented one of the most interesting accounts of the early years of our conflict as it affected the operation of the Baltimore & Ohio R. R.

Last fall several members of our Pacific Coast Chapter made an interesting journey to Central America. Contrary to general opinion, the railroads of these countries have a greater number of new locomotives than those acquired second hand. For several years now, our member "Jerry" Best has visited these countries and his article on the railroads of Guatemala and El Salvador has been prepared with the hope that it would interest not only those that made the trip last fall but to the others of our membership.

Another newcomer to appear in this issue is Mr. John H. White, Curator of Land Transportation of the Smithsonian Institution. His subject of the Silver Engine built by the Grant Works in 1867 for the Paris Exposition is one of interest. No doubt the builder hoped for an increase in orders as the result of his prize-winning locomotive but this did not turn out to be true. Perhaps the Baldwins, McQueens and Rogers locomotives did not take prizes in the Paris Exposition (they were not represented anyway) but their locomotives, as well as those of other builders were preferred to those built by the Grant works.

The Welshpool & LLanfair Light Ry. Preservation Co. Ltd.

The preservation of railway history has taken on many different forms. One of the most unusual and perhaps the most interesting is in the preservation of the little line with its rolling stock and right of way. Usually some form of a corporation acquires the line and the members of the corporation either through dues or contributions keep it in operation through their own efforts. Perhaps the first of these in Great Britain was the Talylln Ry., I believe there is one in Australia and now the Welshpool & LLanfair Light Ry. Preservation Co., Ltd. was formed in January of 1960 for the purpose of acquiring the Welshpool & LLanfair Ry., a short line connecting those two cities located in Montgomeryshire in the upper Severn country. The line was opened for traffic in 1903, passenger service ended in 1931 and all service ended in 1956. The road owned two side tank 0-6-0 engines built in 1903, together with some passenger and freight rolling stock. If any of our members are interested in the preservation of this little line by means of a membership, they should contact Mr. A. Barnes, Membership Secretary, 69 Woodvale, London SE. 23, England. The annual membership fee is £1.1.0.

COVER DESIGN

We are indebted to our artist-member, O. Kuhler for the interesting cover design used on our 1961 publications. It is a Civil War scene, it could be at any one of several places along the Mississippi or any of those mid-western rivers. You will note the artillery in the foreground on the flat cars; the balloon stack (Rogers?) under steam in the foreground, a "dead engine" is being loaded aboard the "Great ————" by the Civil War "G. I.'s" and we have a gunboat in the background to protect operations. It is one of the most interesting covers that we have had in years and we wish to extend our appreciation to the artist for his kindness.

The Confederates Gather Steam
by Edward B. Burns
Bulletin No. 104, R&LHS, pp. 7-30

ERRATA

Page 10, 1st paragraph. Later study indicates that the last four Wânsma locomotives were not delivered as a lot in 1863. The first of the quartet was placed in service late in 1861. The others were on the road by the end of 1863.

Page 10, 2nd paragraph. Minor revisions of these statistics may be necessary when certain discrepancies in early B&O rosters are ironed out.

Page 14, next to last paragraph. It would have been more accurate to have said that the locomotives alone had a value in excess of a half-million dollars.

Page 21, next to last paragraph, 4th line from bottom. "Foes," not "loss," lunged at Jackson from every direction.

Page 26, A line of the MS was skipped by the printer. Notes 11 and 12 should read: ". . . . . elaborated by the author with information from several sources, especially Bell. 12. Bell, 92-122; . . . . . "

Page 27. Add to Note 59: "36th An. Rpt., 66."

Page 28. The list of quotations was printed by accident. Page numbers are MS pages. Bull No. 104 pages are, in the same order, 11, 12, 13, 16, 17, 18, 19, 20 and 22.

Page 30, 4th line of 6th paragraph. MS, pages 29-30 equal Bull No. 104, page 21.

The Confederates Gather Steam

By Edward B. Burns

In the late decades of the nineteenth century the stealing of railroads was embraced as a career by a numerous and distinguished corps. But none of the light-fingered tycoons schemed more ambitiously than a pair of Rebels who, in 1861 swooped down upon the Baltimore and Ohio. Jim Fisk himself would have applauded their brazen design. Thomas Jonathan Jackson and Thomas Robinson Sharp meant to carry the B&O—or a husky percentage of it—beyond the reach of its lawful proprietors. The larcenous enterprise was Stonewall Jackson's very first blow against the North.

Late in April of 1861, with Virginia less than two weeks out of the Union, Governor Letcher had sent Jackson to take command at Harper's Ferry, where the state militia had dispossessed Federals in the Armory and the Arsenal. Not Stonewall Jackson, nor General Jackson. Just a little-known Colonel T. J. Jackson, "Fool-Tom" to the cadets at Virginia Military Institute, where a few weeks earlier he had been a professor of physics and artillery tactics.

Jackson found at the Ferry a small but growing body of militia. It was commanded by a major-general and three brigadiers, each attended by a magnificent staff. Officers, and many enlisted men too, were waited upon by their Negro body-servants. Even the privates counted among their numbers many college graduates and sons of First Families, for many of the pre-war units had been more social than military. Everything was grand and splendid. In field training, however, there was little interest, and precious few equipped to direct it.[1]

Yet none should look scornfully upon this *opera-bouffe* army. These Virginians had seized the government works at Harper's Ferry after a hastily-contrived, adroitly-conducted, swift and purposeful attack which they themselves had planned and delivered. What is more, their coup had given the world its first demonstration of the railroad as a tactical weapon.[2]

The transformation wrought by Jackson's appearance was instantaneous and complete. A concurrent state ordinance had "decapitated" all militia officers with rank above captain. Most of the beheaded departed in haste and bad temper for Richmond or home. Now a stern Scotchman in the austere uniform of a V. M. I. professor was issuing tough orders calculated to turn men into soldiers and soldiers into a fighting force.[3]

Though the impact of Jackson's advent endeared him not at all, he won, little by little, the respect of the troops. If he was strict and demanding, he was also tolerant of pardonable ignorance; he treated enlisted men as intelligent beings with notions of human dignity; and he insisted that his junior officers show a like tolerance and understanding.[4]

In his progress from V. M. I. (at Lexington) to Harper's Ferry Jackson had learned something of Southern railroads. His first assign-

ment had been to conduct the cadets of the Institute from Lexington to Richmond. On April 21st a motley caravan of horsedrawn vehicles had carried the young men only 34 miles to Staunton. The second day's junket, on the Virginia Central Railroad, had wiped out the remaining 125 miles to the capital, though the train had been delayed when it left the rails in a tunnel. On April 29th, en route from Richmond to Harper's Ferry, Jackson had telegraphed Governor Letcher a message urging the construction of a railroad from Strasburg to Winchester "for strategic purposes." Thus he had seen the potential of the steam cars, and had met up with flaws in the Southern system.[5]

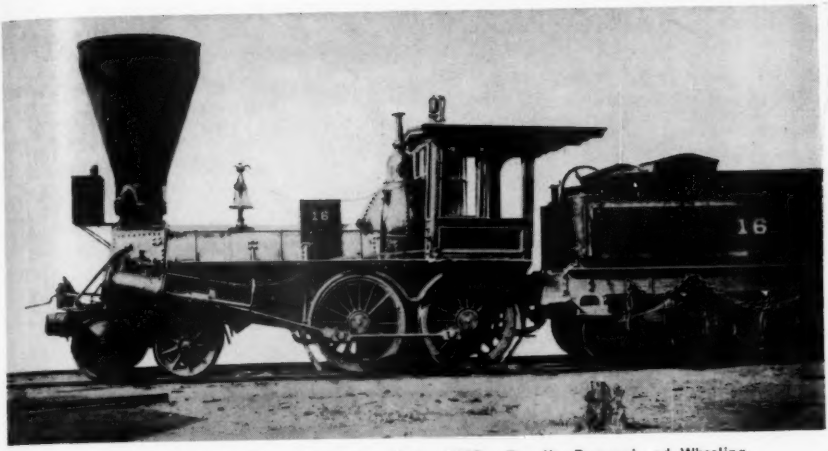
The railroad complex of the seceded states was impressive enough on a map. Most of it, however, was single-track line with skimpy and infrequent passing track. Gaps in the network hampered the establishment of through-routes. Interchange at junction points often was frustrated by unmatching track-gauges or the lack of connecting track. The traffic which Southern commerce afforded did not favor large rosters of rolling-stock or the progressive up-dating of equipment and right-of-way. The engineering and technical departments of Southern roads were staffed largely by Northerners, who now began a homeward exodus.[6]

To gird the railroads for war there was only the scrawny industrial establishment of the South. The few plants adapted or adaptable to the manufacture of locomotives, boiler plate, rail, car wheels and the like now were deeply committed to the more pressing requirements of Ordnance. There were no Southern whaling ports to provide lubricants and lighting oil. The firms which formerly had supplied the roads suddenly were on the wrong side of an impassable frontier, or on the far shore of a blockaded ocean.[7]

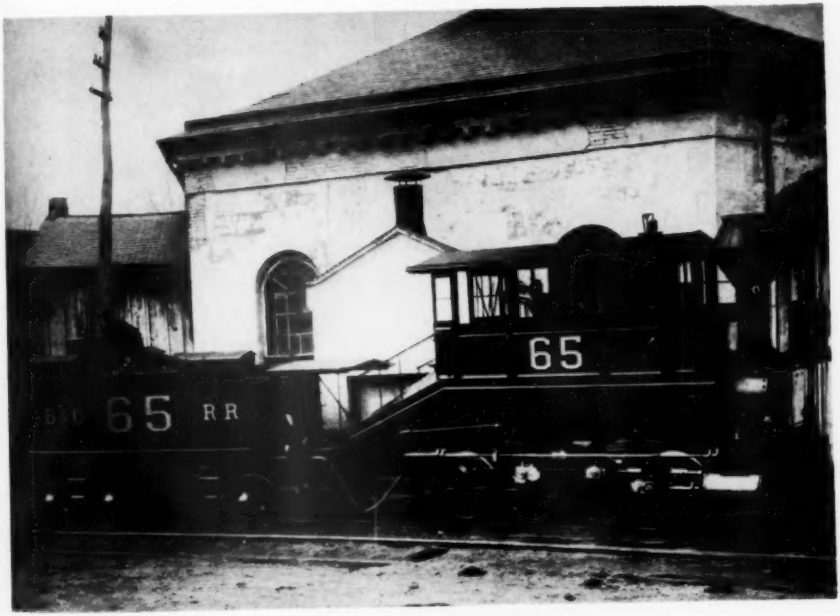
Scant cheer did a railroad map offer to a Rebel commander at Harper's Ferry. Jackson's main avenue to the rear was the Shenandoah Valley. From the Ferry to Staunton, 127 miles up the Valley, there were two patches of railroad totaling only 57 miles. The first patch was the Winchester and Potomac, which connected with the Baltimore and Ohio at Harper's Ferry. W&P trains rattled over 32 miles of the most primitive track-work in America to a dead-end at Winchester. Rails were of wood topped with 2x½" strap iron weighing 16½ pounds per yard. Passengers were whisked over the distance in 2½ hours. The other patch was the tag-end of the Manassas Gap Railroad, which took up the Valley route for the 25-mile run from Strasburg to Mount Jackson.[8]

Separating these two scraps of railroad were the 18 miles between Winchester and Strasburg, subject of Jackson's message to Letcher. Beyond the terminus at Mount Jackson it was 52 miles to Staunton and the Virginia Central before one might hear again the echo of steam whistles in the Valley.

Rail communication with Richmond was a matter of concern to Jackson. The Winchester-Strasburg hiatus foredoomed through service between Harper's Ferry and the capital. From Strasburg, however, a zig-zag route was available. Goods or soldiers could be moved over the Manassas Gap Railroad eastward through the Blue Ridge to Manassas Junction; thence southwest on the Orange and Alexandria to Gordons-

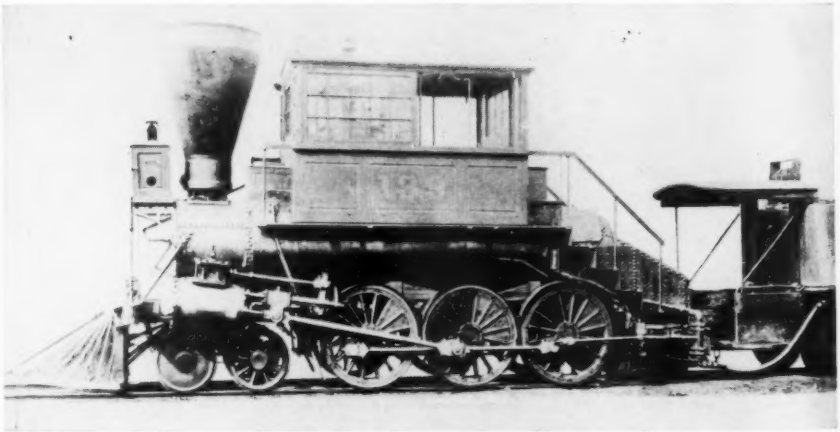


B. & O. #16, "P. E. Thomas," William Norris, 1838. Ran the Benwood and Wheeling accommodation train in 1856.



B. & O. #65, Ross Winans, 1850

B. & O. #80, Ross Winans, 1851.



B. & O. #139, New Castle Mfg. Co. 1853.

ville; and at length via the Virginia Central southeast to Richmond. The itinerary depended upon the forebearance of Federal commanders, who were not always content to keep their forces north of Manassas Junction; nor off the eastern portions of the Virginia Central, for that matter. This want of Yankee cooperation shifted much traffic to the deplorable highways of the state.

To solace Colonel Jackson: all of the railroads identified with his interests were of the English (later standard) 4-foot, 8½-inch gauge; and the separate roads enjoyed physical connections at all junctions, Richmond excepted.

Across the northern end of the Valley, right under Jackson's nose, lay the Baltimore and Ohio Railroad, elaborate beyond the dreams of Southern operators. The B&O ran first-class equipment over a well-layed double-track line. From Baltimore and the east it approached the Potomac at the Point of Rocks. Thirteen miles upstream from the Point a covered road and rail bridge on massive piers carried the tracks from the Maryland shore to Harper's Ferry. After a short-cut through Martinsburg the railroad followed the south bank of the Potomac for most of the distance to Cumberland, Md., a coal-mining center. Farther west, at Grafton, the main stem took up a northwest heading to Wheeling; a busy branch, known as the Northwest Virginia Railroad, went on to the Ohio River at Parkersburg. With its connecting lines the B&O reached out for business in all parts of the West.

In 1858 John Work Garrett had been named president of the Baltimore and Ohio. His twenty-six-year incumbency gave the stockholders no reason to regret their choice. Princely inducements from other railroads failed to divert him from a career dedicated to the city of Baltimore and the B&O. In Garrett's day rail executives walked in a venal environment, yet his biography may be written without recourse to euphemy.[9]

Out on the line Garrett's *alter ego* was the redoubtable William Prescott Smith, Master of Transportation. Smith was more than a good operating man. It was due largely to his efficacious superintendency through a four-year chronology of emergencies that the B&O was not made a part of the United States Military Railroad. The rather excitable Garrett was fortunate to have a man who met every foreboding circumstance with unshaken equanimity.

In the spring of 1861 the condition of the property reflected the character, energy and ability of the managerial team. The road owned 236 locomotives and about 3600 cars of all types. They rolled on the best quality T-rails. Maintenance shops, some within easy reach of covetous Rebels, were opulently furnished. Trackage and facilities were built to the needs of an expanding commerce.[10]

To a Southern eye the most awesome asset of the B&O was its motive power. The classic locomotive of the era was the 4-4-0 American type. At the start of the war the B&O had 44 specimens of this breed. But its heavy freight trains—and in some areas its passenger trains—moved behind many-footed beasts. Of its 236 locomotives, 3 were 0-6-0's, 26 were 4-6-0's, and 144 were 0-8-0's.[11]

Of the 0-8-0's, 118 were Ross Winans camels with their lofty cabs born howdah-wise upon their boilers; the singular profile of a Winans camel was no more exceptional than the mechanical features which it incorporated. Seventeen of the 4-6-0's were of a type designed by Master of Machinery Samuel Hayes in 1853; they borrowed the center-cabs and drag-tail fireboxes of the Winans engines, and often are confused with them. The remaining nine of the ten-wheelers were the rear-cab, wagon-top engines originated by Henry Tyson, successor to Hayes. Tyson's specifications had touched off, in 1857, a bitter wrangle over wheel-arrangements between himself and Ross Winans; Tyson's will had prevailed, and the infuriated Winans closed his shop, thus ending his long, unique and fruitful association with the Baltimore and Ohio. One more transaction remained between the extraordinary inventor and the railroad: In 1863 another Master of Machinery finally prevailed upon Winans to sell the B&O the four locomotives which were in his shop when it was shut down; three of the four were the familiar camels, and the other, of all things, was a 4-8-0.[12]

It must not be thought that the B&O roster was an exclusive preserve for heavy, modern power. Indeed, it was almost a museum of locomotive history. The fifteen 0-4-0's were vertical-boilered "grasshoppers" and "crabs" from the infant days of railroading. There were four venerable Norris engines, each with a single pair of drivers, plus two others which had started life in that condition. Eight of the 0-8-0's were gear-driven "mud-diggers" by Winans. Still in use were twenty-three locomotives built between 1834 and 1839, and more than thirty from the decade following. The road which bought the largest and latest was reluctant to part with the oldest and lightest; as late as 1892 four nine-ton "grasshoppers"—one in its fifty-eighth year—were in daily service.[13]

Old-timers notwithstanding, the B&O had 173 locomotives with six or more drivers. By way of contrast, all the other railroads of Virginia possessed less than a dozen with six driving-wheels, and only one with eight; they were used on the Virginia Central and the Virginia and Tennessee to conquer Appalachian grades.[14]

War was a dilemma for the Baltimore and Ohio Railroad. A riotous contiguity of uncongenial factions had long been a salient element in the history of Maryland; and in Western Virginia the independent mountaineers were now torn by conflicting loyalties. Along the line of the railroad there were Unionists, Secessionists and Neutralists aplenty; there were Unionists who hated Abolition, and States-Righters who deplored slavery; there were rabid Know-Nothings, die-hard Whigs, and great numbers of Democrats of all shades. The one rarity was a Republican.[15]

In this atmosphere Baltimore citizens battled with Union troops passing through their city, and General Benjamin Butler moved in to place Maryland under his thumb. Each of the contending parties outlined for President Garrett the proper policy of the B&O, and warned him of the consequences if any other were adopted. To make his position more delicate, his trains passed in and out of the camps of both armies.

Relief for Garrett was not to come from Washington. The Secretary of War was Simon Cameron, who carried his scruples lightly. Two of his top lieutenants in railroad affairs were President John Edgar Thomson and Vice-President Thomas A. Scott of the Pennsylvania Central. From Harrisburg that railroad had a connection to Baltimore over the line of the Northern Central, otherwise known as the "Cameron Road." Together the two Centrals competed with the B&O for traffic between Baltimore and the West. The competition continued a bitter rivalry between the Pennsy and the B&O that grew as their rails extended. In the years just before the war Scott and Garrett had jousted in a struggle for control of the Northern Central.[16]

The bold genius of Thomson and Scott has won for them eminent places on the list of illustrious railroaders; and Cameron was not quite the scoundrel which repute has made him. But none of the trio ever was guilty of flagrant altruism; the discomforts of John W. Garrett cost them never a twinge. Interference on the Washington Branch of the B&O was a bitter potion for Garrett; but the autocracy's callous neglect of the vital main stem was a danger to the Union as well as the railroad. In April Thomson went so far as to advise the destruction of all B&O bridges between Baltimore and Harper's Ferry. While soldiers on the Cameron Road safeguarded the rollicking prosperity of the two Centrals, the imperiled B&O had no protection beyond that deriving from the initiative of local commanders.[17]

Acknowledging no dismay, the B&O management disposed of its dilemma. Garrett himself, whether for patriotic or practical considerations, declared for the Union. Employes were asked to be neither pro-Union nor pro-Secession, but to be pro-B&O. The road was operated as if there were no war. Visitations of Mars were treated as accidents of Nature. If interruptions made it impossible to work the line as a whole, it was worked in segments. The policy bore fruit. After a half-year of war W. P. Smith could say, "but such was the singleness of purpose with which our men devoted themselves to their duties, that no special difficulties arose in working the Road, other than such as were dictated by supposed military necessities."[18]

When Jackson took command at Harper's Ferry in the first week of May, about fifty miles of the B&O—from the Point of Rocks to Cherry Run—came under his surveillance. An arrangement, already in effect, permitted the free passage of most traffic, troops and munitions excepted. It had been negotiated in April by Major-General Kenton Harper, then in command at the Ferry, and Charles J. M. Gwinn, general counsel for the B&O. Subsequent endorsement by Governor Letcher made it a matter of policy.[19]

Consists were dominated by vast quantities of coal coming down from Cumberland to United States Navy installations on the coast. Now and then an incident interrupted business-as-usual. Before Jackson's arrival a passenger train, thought to be sneaking through with troops, almost was blasted from the rails by artillery in ambush. Cannoneers were disabused just in time; the only soldier on the train was General William S. Harney, then on his way to Washington and

retirement. On the Federal side, General Butler was taking a few steps to control goods shipped from Baltimore over the main stem. For the most part, however, the trains ran on schedule, unprotected by Federals and unhindered by Rebels.[20]

The lenient policy was a gesture to sympathetic Marylanders and wavering West Virginians. Gentle diplomacy was not without warrant. When it was abandoned, protests came from partisans in both camps. Allegheny shippers and Baltimore businessmen felt the pinch, no matter their politics. The worth and revenue of B&O stocks and bonds were of direct concern to many. Marylanders who owned none of the railroad's popular stock were aware that their city and state governments were heavy investors. Discreet authorities were averse to injuring the pocketbooks or feelings of border-staters.[21]

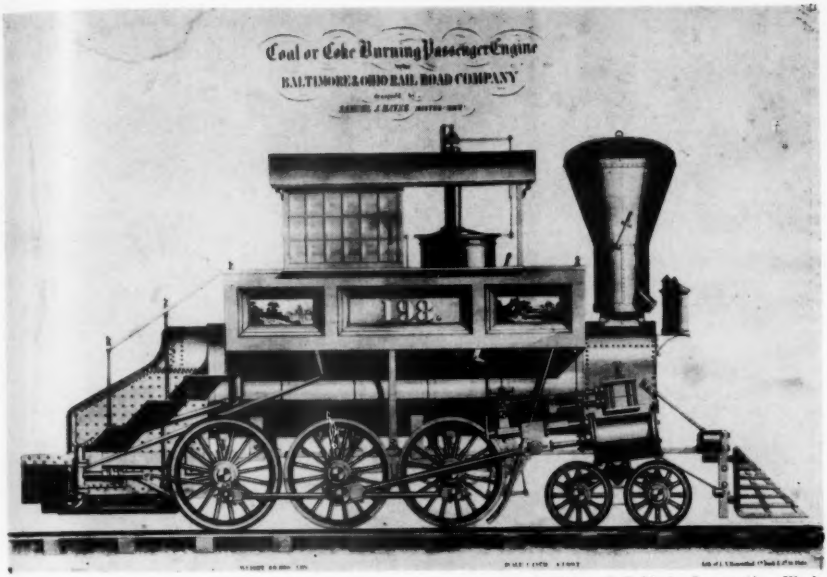
To Jackson, Presbyterian deacon and Mexican War veteran, an understanding with the enemy was a compact with the devil. Still, a good soldier was obliged to honor the policies of his superiors. B&O trains continued to run after his arrival, but the railroad discovered that the new policeman at Harper's Ferry was a cranky fellow. Dispatchers had to cope with maddening time restrictions. On May 14th a train was seized and held without explanation. In an exchange which revealed Jackson's attitude, General Butler sent William Prescott Smith with a proposition: Butler would allow groceries to move from Baltimore to the Ferry if Jackson would permit beef to pass east. "Tell Major-General Butler," Jackson replied, "that I think we can do as well without almonds and raisins as he can without beef."[22]

Soon a new facet of Jackson's personality was cut by war and polished by Scotch thrift. Never was there a Rebel so zealous to augment the public property of the Confederacy from sources at the North. As the war progressed this trait would add "Wagon-Hunter" to his catalog of sobriquets, and his Valley soldiers would hail Union General Banks as their best commissary officer. Ah, the gleam in his eye at the sight of a bulging Yankee warehouse.

An appetite such as Jackson's could not resist a railroad such as the B&O. When all sentiment cried out at the sight of those handsome locomotives in the service of the Union; when all reason approved their removal to the lean and hungry railways of the South: what chance, then, had Policy against his inward cravings?

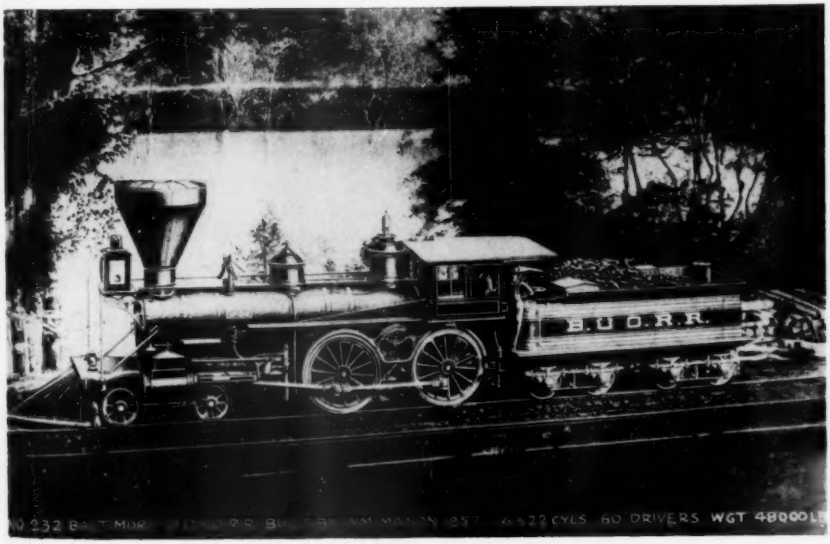
A scheme was budding in Jackson's mind. The circumstances at Harper's Ferry combined to vouchsafe its success. The man himself and his acquisitive penchant were yet unremarked by Fame. B&O people had been dealing with a crusty eccentric. Beyond that they knew him no better than the Baltimore *Sun*, which committed the unforgivable journalistic sin of botching his name: "Colonel Johnson," the newspaper called him.[23] The railroad knew Jackson just well enough to expect unorthodox orders without questioning their alleged purposes. Training activities and defensive preparations were perfect curtains for the colonel's plot. And his reticent habit was a guarantee against leaks.

Jackson's tactical responsibilities provided jaws for his trap. Gradually he had extended his influence westward, almost to Cumberland. Now his forces had to be disposed to meet the military require-

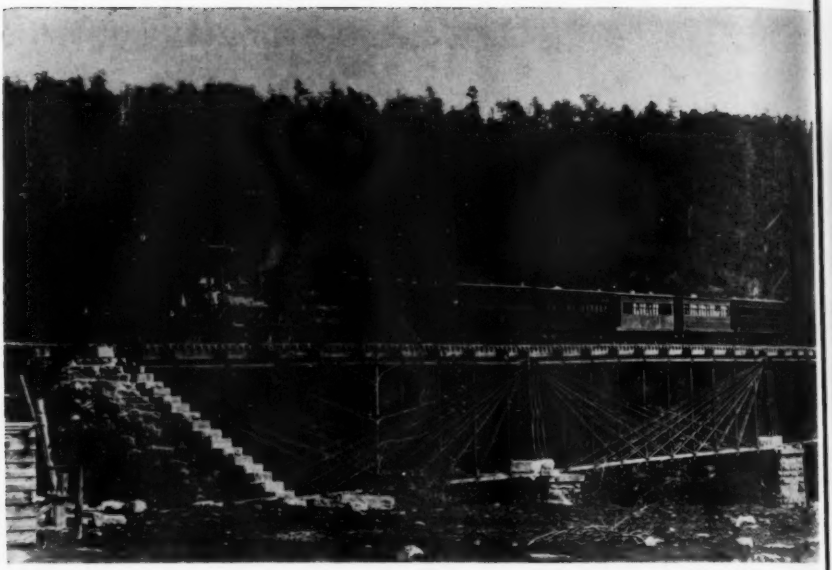


Courtesy of Baldwin Locomotive Works

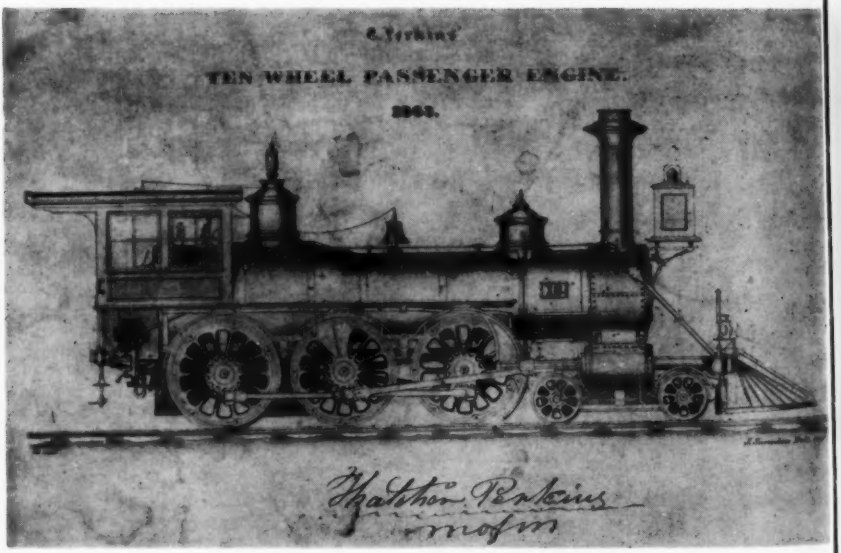
B. & O. #198. A Hayes Ten-wheeler, built in 1854.



B. & O. #232, William Mason, 1857.



A Mason locomotive hauls the first train over the Allegheny Mountains.



B. & O. #18, a Thatcher Perkins locomotive of 1863.

ments described by geography and topography. Uneasiness at Richmond did he cause when he "invaded" Maryland to place men on the heights across the Potomac. Bolivar Heights and Loudon Heights, on the Virginia side, called for similar detachments. Potomac crossings had to be guarded, and so did the line of the B&O.[24]

Two of the positions occupied by Jackson's men deserve special notice. Captain John D. Imboden and his battery were posted at the Virginia end of the Point of Rocks highway bridge. This was a plausible place to stand against the approach of General Butler, who was camped on the B&O near Relay. To Martinsburg, a likely objective for Federal General Patterson, went Colonel Kenton Harper with the 5th Virginia Infantry. On Sunday, May 19th, Jackson made a furtive but thorough inspection of Imboden's position. Presumably he did the same at Martinsburg.[25]

Jackson's training program would drive the prey into his trap. The program was urgent business, and the B&O was disrupting it—so Garrett was told. At night the coal trains rumbling to the seaboard shattered essential rest; by day the commands and instructions of officers were lost in the thunder. Henceforth eastbound trains would have to pass through Harper's Ferry between 11:00 A. M. and 1:00 P. M. It was an awkward order, but not impossible on a double-track road. Garrett, looking into the cannon's mouth, had no course but to comply. In a few days the B&O schedule was adjusted.

Again Jackson complained to Garrett. Eastbound silence availed naught when day and night the empties clattered up the westbound track on their way back to Cumberland. The colonel ordered that the midday time limits be observed by all trains in both directions. The cannon was there as before; once more Garrett had nothing to do but obey. Said Captain Imboden, "We then had, for two hours every day, the liveliest railroad in America."[26]

In the evening of May 23rd Jackson gave Imboden his instructions. At 11:00 A. M. Friday, the 24th, the captain and his men were to cross to the Maryland end of the Point of Rocks bridge. There they were to stop all eastbound trains, but to permit westbound trains to pass until noon. At twelve o'clock, a practical deadline for engineers who meant to run the time gauntlet, Imboden was to obstruct the railroad so that no trains could pass for several days. Colonel Harper, at Martinsburg, received similar instructions, but with directions reversed. This was the first time that Jackson had revealed to anyone, Yankee or Rebel, an inkling of his dark designs.[27]

Execution of the instructions was not letter-perfect. In obstructing the railroad the men were as amateurish as schoolboys, but not nearly as destructive. Imboden's force used gunpowder (dynamite was then unknown) in an attempt to dislodge Bollman's Rock, a huge boulder poised fifty feet above the track; it was Saturday before they succeeded. The same group used the same explosive to blast about twenty-five feet of track. Evidently one line of track was left untouched, for the Friday and Saturday express trains from the West carried their passengers into Baltimore. Both tracks were effectively sealed off Saturday after-

noon when Bollman's Rock crashed down on the right-of-way. From Martinsburg there were no reports of damage to the line.[28]

Neither boulder nor blasted track was an obstacle to daunt John L. Wilson, Master of Road. But the soldiers themselves were good and sufficient obstructions. For insurance, the men at the Point of Rocks disposed some of the coal gondolas as barricades against Federal interference. At Martinsburg the Virginians controlled enough of the environs to make the trap secure.[29]

Thus the jaws closed. Tom Jackson had snared more than fifty locomotives and about four hundred cars!

The arithmetic of the capture cannot be stated exactly. It is commonly given as "fifty-six locomotives and over three hundred cars." A summary of evidence indicates that the locomotive figure, if not accurate, is nearly so. The car estimate seems much too modest. No conceivable adjustment of the statistics can alter significantly the magnitude of Jackson's coup.[30]

In the four years of fighting no other single stroke would yield so much operating rolling-stock. Jackson had taken title to a roster which no other railroad in Virginia could match. To protect 1300 route-miles (leaving the B&O out of the picture) the fifteen steam railroads of the state had a total of 136 sound locomotives, plus 44 in need of repairs. The Virginia Central and the Virginia and Tennessee, each with 27 iron horses, had the largest stables in the commonwealth. Virginia roads had plenty of room for cars too. Mobilization already was causing a pinch. There was not nearly enough equipment, and much of it was obsolete. On the Richmond, Fredericksburg and Potomac, for example, only 15 of its 160 serviceable freight cars were double-trucked.[31]

By telegraph the B&O asked Jackson why its trains were detained. It was done, the Colonel answered, to halt the shipment of coal used to fuel vessels in the service of the United States government. Simultaneous events seemed to attest Jackson's reply. The Virginians at Harper's Ferry had interrupted the passage of coal barges on the Chesapeake and Ohio Canal. Very shortly they would blast vast quantities of rock into the canal to insure the stoppage. There were 3000 tons of coal on the trains in the trap.[32]

Jackson's explanation was less than candid. Coal or no coal, he did not mean to let the railroad have the use of the "detained" rolling-stock.

What use would the Rebels make of Jackson's prize? To the Baltimore and Ohio the locomotives alone had a value well in excess of a million dollars. To Virginia and the emerging Confederacy the equipment had a value beyond measure—if it could be placed on Southern rails.

The inadequacies of Virginia's rail facilities multiplied the worth of Jackson's bonanza; the same inadequacies multiplied the problem of removal. Beyond the flimsy link with Winchester there was the unbridged gap to Strasburg. As Jackson pondered these difficulties, an overshadowing complication intruded.

The Confederate government, now moving from Montgomery to Richmond, was taking the Virginia forces into its armies. President Davis and his advisers shared with Jackson a firm faith in the strength and strategic importance of the Harper's Ferry position. Command of the esteemed bastion was given to General Joseph E. Johnston, one of the ranking officers of the Confederacy. He reached the Ferry on the eve of Jackson's bold stroke, and moved to assume his new duties next day. This was the famous occasion on which Jackson respectfully declined to turn over his command until Johnston produced evidence of his authority to receive it. Johnston's accession was thus postponed for twenty-four hours. Two possibilities, heretofore unexplored, invite speculation: Was Jackson's intransigence a stalling device to protect his unsprung trap? Did the two officers quietly agree that it would be more discreet to allow the event to occur under the auspices of an unknown colonel?[33]

Colonel Jackson was replaced but not deposed. The general noted with approval the accomplishments of his predecessor, and shortly gave him the command of a brigade. To the War Department Johnston recommended that Jackson be made a brigadier-general.[34]

On one important point the new chief contraverted the opinions of Jackson. The Ferry, said Johnston, was neither natural fortress nor strategic key. On all sides it was overlooked by dominating heights. It could not be held against an equal force attacking from Maryland. The position was easily turned, for it was twenty-two miles east of the best route into the Valley from the north. Winchester, a focal point in the Valley highway pattern, was a more suitable place to concentrate against whatever approach the enemy might choose. The possible necessity for a speedy junction with Beauregard at Manassas favored the Winchester position. Johnston urged the immediate evacuation of Harper's Ferry.[35]

The general's assessment was variously received. A reluctant Richmond gave him tardy authority to abandon the Ferry after the withdrawal had begun. But Johnston's logic was clear to Jackson. Though the ex-professor did not have a real eye for terrain, he had an ear for those who did. In another chapter of the war—the prelude to Antietam—Jackson vindicated Johnston by recapturing the Arsenal after an approach from Maryland; the Federal garrison of 11,500 was obliged to surrender to Stonewall because it failed to heed the warnings of General McClellan, who wanted it to abandon the buildings and fight from the heights.[36]

Evacuation stung the Baltimore and Ohio. Since May 24th Garrett and his superintendents had been laboring manfully to repair the line, regain the captured equipment, and restore service through Harper's Ferry. Now Johnston was ordered to destroy before retiring "everything which could serve the purposes of the enemy." The import of Confederate activity in the lower Valley was understood in Baltimore, where the *Sun* reported the gist of the quote above. The order did not exempt railroad property. B&O management was compelled to seek a new adjective for the status of its "detained" rolling-stock.[37]

Critics scolded the Confederate government and the army for failing to bring off captured B&O equipment over the line of the Winchester and Potomac. General Johnston replied, somewhat speciously, that it would have been impolitic and unjust to carry away the property of Marylanders until evacuation made it of value to the enemy, by which time it was too late. On firmer ground he argued that more important business, the weapons and machinery of the Arsenal, was stretching the little road's capacity to the maximum. Certainly the W&P was straining under the burden. Johnston found it necessary not only to restrict transportation, but also to issue an order denying the premises of the railroad station to persons having no business with the trains.[38]

Johnston had a final argument so cogent that all others were obviated: the W&P track would not carry large engines. More than half of the B&O roster had been built by Ross Winans, earliest apostle of the doctrine that locomotives should be as heavy as the rails could bear. The 4-6-0's, especially admired by the Rebels, were thirty-tonners, almost twice the weight of the largest W&P engine. The Winchester road, acquired by the B&O in 1848, never was brought up to the standards of its foster parent. The crude trackage, which skirted the Shenandoah on skimpy trestling, sufficed to carry the line's main source of revenue—green groceries for Baltimore tables. Johnston was prevented from using B&O motive power for the removal of arsenal property "by the remonstrances of the engineers of both roads, founded on their opinions that the heavier engines of the Baltimore and Ohio Railroad would crush the trestlework of the Winchester road if brought upon it."[39]

So it seemed for the moment that Jackson's dream was frustrated. There was neither time nor means to place his beautiful locomotives on the rails of interior Virginia. The spoiliations apparently were doomed to the holocaust which would light the withdrawal.

As Johnston read his orders, rolling-stock was not the only B&O asset which might serve the purposes of the United States. Bridges, water stations, shops, telegraph, tracks and wayside structures were fair targets. Damage to fixed properties would cost the railroad more dearly than the loss of engines and cars.

On June 2nd the B&O had a preview of the havoc which would begin about ten days later. On that day the 148-foot Opequon Bridge, two miles east of Martinsburg, was destroyed. The purpose may have been to seal off the rolling-stock, most of which had been gathered in Martinsburg. It was too early in the war for sophisticated demolition, but the native cunning of the Rebels achieved appalling success. Fifty loaded coal cars were run through a break in the span and set fire. For two months they burned so fiercely that wheels and axles were melted.[40]

By the 13th of June Johnston's evacuation plans were nearly complete. A priority item was the crippling of the B&O. The Pillar Bridge at Martinsburg, nine forty-foot spans, collapsed in an inferno, with an engine and several loaded coal cars employed as at Opequon Creek. Other bridges in the area were reduced.[41]

On the 14th Johnston ordered the destruction of all Potomac bridges from the Point of Rocks to Shepherdstown. The rear guard

at Harper's Ferry fell upon the great covered bridge. Seven spans totaling 817 feet were burned to their masonry piers; only the iron span at the Virginia end survived. The same crew demolished seventy 15-foot spans which ran on iron trestling through the arsenal yard. Then the men slipped off in the direction of Winchester; Harper's Ferry was evacuated.[42]

Less than a week later Colonel George Stuart and his Marylanders were sent back to the arsenal to gather up some overlooked rifle stocks. This group burned the wood parts of the remaining iron span, and did away with the highway bridge across the Shenandoah. Still full of mischief, the men turned their attention to B&O No. 165, a Hayes ten-wheeler, which had been left on the iron span when Johnston departed. Taking up crowbars, they nudged the giant into the Potomac.[43]

On June 19th Jackson had been sent with his brigade to Martinsburg to meet a threat from General Patterson. There he carried on the campaign of devastation with all the callidity and vigor of his superior. One of the Tuscarora bridges was burned; the Cherry Run spans were thrown off their abutments; explosives left a gap 130 feet long by 67 feet deep in the massive stone arch at Back Creek. The B&O shops were battered, but not before the Confederates had shipped south machinery and repair materials valued by the railroad at $40,000. Meanwhile other officers in Johnston's command were razing B&O bridges as far west as Patterson's Creek, eight miles from Cumberland.[44]

As June neared its end it became apparent that an early retreat from Martinsburg was inevitable. Jackson, following orders, directed the destruction of all strategic goods that could not be carried with him. Sadly he consigned to the torch most of his prized collection of B&O rolling-stock. Many trains of cars were burned where they stood. Others were run upon previously neglected bridges to fall in smoking tangles as flames ate through the spans. Two weeks later an awed Washington reporter surveyed Jackson's work; in a chaos of blistered metal and coal still red-glowing he counted forty-one or forty-two charred locomotives.[45]

On the 2nd of July Jackson took his force out of Martinsburg. At nearby Falling Waters he displayed his competence in his first engagement with Federals. A day or two later he learned that he had been commissioned brigadier-general. For a brief period Johnston and Patterson maneuvered with little incident. Then Jackson left with his chief for Manassas and glory.

When Jackson's brigade was sent to Martinsburg in June, Johnston had directed its commander "to protect and aid an agent of the Government, appointed for the work, in removing such of the rolling-stock of the Baltimore and Ohio Railroad as he might select for the use of the Confederacy, or as much of it as practicable."[46] The agent was Thomas Robinson Sharp. Though his name may be found in a few specialized histories, the general reader must be introduced. An illuminating letter of introduction—here condensed—was addressed by W. T. Jones, of the Quartermaster's Office at Strasburg, to Colonel Angus McDonald, a valiant and venerable Valley warrior:[47]

August 10, 1861

My dear Sir:

I introduce to your acquaintance and particular attention my friend, Mr. Sharpe, the "Special Agent of the Confederate States." I have no doubt you are aware of the important services Mr. Sharpe has rendered in his prompt and successful removal of a large number of locomotives to this place from Martinsburg. . . . He has just returned from a remarkable and eminently successful enterprise, viz., the removal of two splendid engines from Leesburg [on the Alexandria, Loudon and Hampshire] to Piedmont Depot on the M. G. R. R. . . . Mr. Sharpe now only needs your protecting wing to complete his valuable labors in another direction, the importance of which, I feel confident, you will fully appreciate, and after his explanation and evidence of authority to embark upon the matter, will elicit your full approbation and protection. . . .

W. T. JONES

Though Sharp signed his name with a bold, clear hand, the gratuitous "e" was almost universal. Jackson, after a half-year's association, tacked it on when forwarding a letter signed by Sharp. About his status there was equal uncertainty: as a civilian he often was called "Colonel"; as a captain he was called "Mister." Many dispatches left him nameless, identified only by a variant of Johnston's omnibus "agent of the Government."

The vagueness of Sharp's colleagues was as undeserved as his current obscurity. A Pennsylvanian by birth, he could look back, at the age of twenty-seven, upon eight years of managerial experience with Southern railroads. His unique wartime activities earned for him important trusts in a variety of assignments within the Confederacy and abroad. After the war he pursued a long and notable career in the upper echelons of Northern railroading. It is a wonder and a pity that his record is so dimly lit.[48]

In 1861 some of the haze about Sharp was Shenandoah mist. The Valley remains a poor field for those who admire a neat perspective of orderly, documented warfare. Whole armies and detached companies, regulars and partisans, Federals and Confederates, popped in and out of the many gaps, and bounced against each other in the random habit of molecules. An extended side-action, such as the removal of the locomotives, seldom was witnessed from beginning to end by a literate observer with a notebook. Jackson's files might have stitched together some of the scraps, but they vanished in the Second Corps catastrophe at Sayler's Creek on the road to Appomattox. B&O records might shed more light if the great Baltimore fire of 1904 could be rescinded. The story of Sharp's work in the Valley must be read piece-meal, with many missing paragraphs.

In the 1870's Sharp would become assistant to William Prescott Smith, and later would occupy Smith's chair as President Garrett's

right-hand man. In 1861 his future employers had an opportunity to observe his talents under circumstances which hardly prophesied an alliance.

For Sharp, at Martinsburg, the handiest Confederate rails were at Strasburg, forty miles distant on the Shenandoah Valley Turnpike. Over this highway he proposed to move the locomotives. Few of them—perhaps none—left Martinsburg before Jackson applied the torch. However, in the fluid nature of Valley warfare, Rebels were soon again in the town. Jackson's preparations for evacuation had manifested his genuine aptitude for arson, but he had failed to take into account the sturdy character of the Locomotive Engine. Sharp's knowing eye discerned that a good number of the flame-licked engines were yet basically sound and fit for rehabilitation.

For the work at hand Sharp mustered thirty-five men and forty horses. Six of the men were machinists and ten were teamsters. Hugh Longust, a Richmond railroader, led the crew. John O'Brien, a 21-year-old locomotive engineer, apparently was entrusted with the mechanical work.[49]

The first experiment was a 4-4-0. Side-rods, running gear, bell, whistle, sand-box—whatever was weighty or susceptible to damage—were removed and packed in wagons. Off came the wheels, except for the rear pair of drivers. A bogie fitted with thick wooden wheels, iron bound, was installed where the pilot truck had been. Then forty fat farm horses, four abreast in ten ranks, moved off with the plucked giant. Three days later the weird cavalcade was in Strasburg. There the locomotive regained her missing wheels for the rail journey to Richmond.[50]

According to one correspondent the initial trial was not without contretemps. On the first down-grade the locomotive broke loose, killed a few horses, and toppled over. The engine soon was righted, but the need for some braking arrangement became obvious. Quoting the source, "The next one had crude brakes; across the frame and fastened in the jaws where the front axle ran, a huge timber was placed; enough men could get hold of this to help turn the engine, hold her and prevent her turning over." The need for brakes is perhaps more clear than the description of them.[51]

Circumstances and experience prescribed variations. Some observers reported army wagons rather than bogies under the front ends. A diarist on the route saw thirty-two draft horses hitched to a single wagon. John O'Brien is credited with recounting that the paired drivers and the pilot trucks which had been removed rolled on their own wheels behind teams of two and four horses. It has been said that in some cases short boards were strapped to the circumferences of the rear drivers to prevent their cutting through the pavement.[52]

Transported thus, thirteen more engines followed the bellwether from Martinsburg. Two were abandoned by the wayside. The Turnpike from Martinsburg to Strasburg (now US-11) is not beset by grades to faze a 250-horsepower automobile. But it is hilly enough, and in the days when roads followed the contour of the land, every brook meant a dip and a climb. Often the teams faltered. Then every man available, as many as two hundred, laid hand to rope and strained with the beasts.

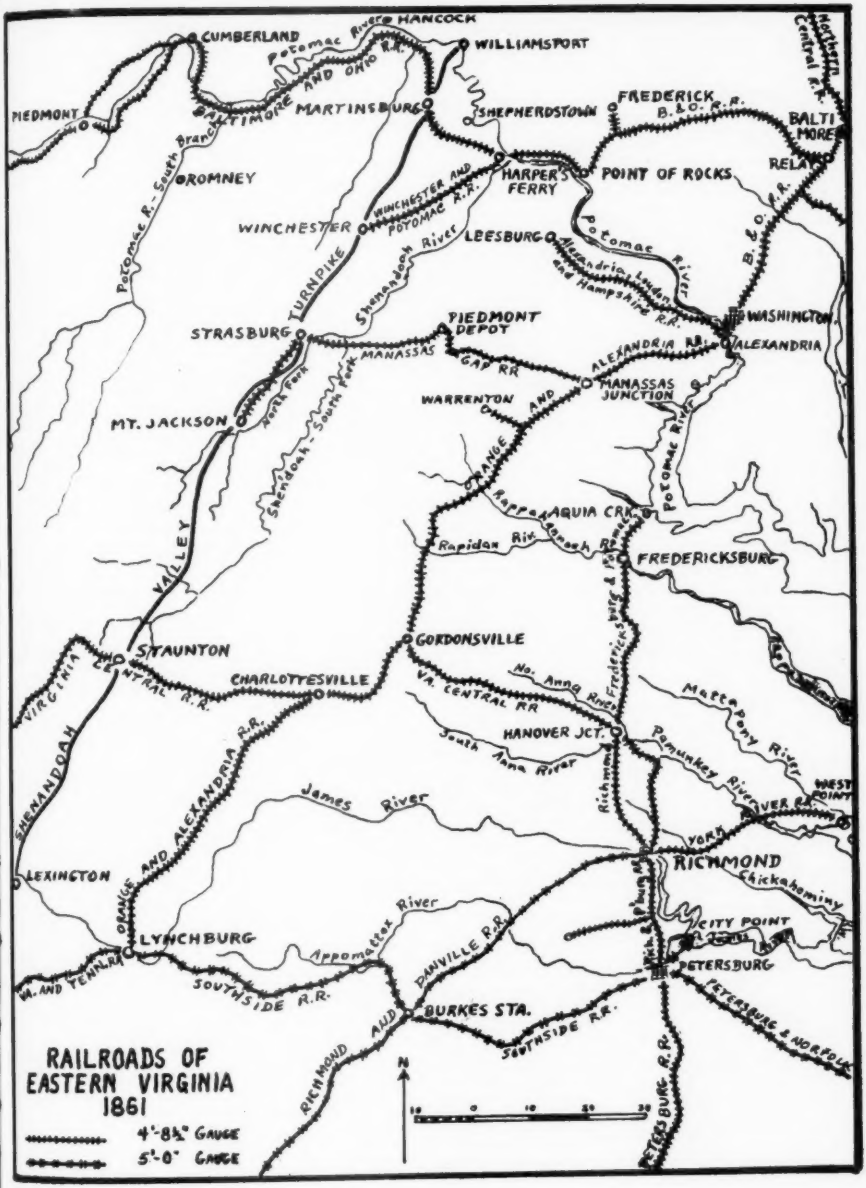
Sub-base was primitive too, and the narrow tires of the driving wheels were wont to break through the thin frosting of macadam. Jacks, timbers, sweat and compelling expletives restored progress. O'Brien's anonymous auditor tells how one hard nut was cracked:[53]

> At one place in the road a turn about a steep bluff was so short it was deemed impossible to get the engines around, and even the commander was disposed to destroy them and go, but the mechanics in charge declared that, if given enough men and horses, they would take them *over* the bluff, and, although the sides were rough and very steep, they successfully got them over and to their destination. . . .

Some accounts are colored by overtones of artillery and sniper fire. Possibly authentic; but it is easy to believe that the gunplay was heard most clearly in the reminiscences of later years. Letters from Southern commanders assigned to protect the passage do not mention encounters within range of the struggling teamsters. For the period of the removal Dyer's scrupulous *Compendium* lists no brush of arms closer than Shepherdstown, about eight miles east of Martinsburg. In the Shenandoah sector Yankees did not venture far from the south bank of the Potomac.[54]

The progress of the removal cannot be narrated exactly, but various correspondents have provided a rough time-table. On August 10th, in the letter introducing Sharp, W. T. Jones called attention to the large number of locomotives already brought from Martinsburg. The removal of the two Loudon and Hampshire engines, mentioned in the same paragraph, must have been a concurrent endeavor rather than an interruption. On August 23rd a message from Quartermaster-General Abraham C. Myers showed that Sharp's efforts continued in the same direction. W. P. Smith wrote on September 6th of five locomotives, in need of heavy repairs, lately hauled by turnpike to Strasburg. Also in September Turner Ashby stated that he was in command of a force of militia ordered to protect "Mr. Sharpe" in the removal of engines. As late as December 11th Sharp himself called for instructions on the disposition of an engine and nine carloads of strategic materials which he had brought over the W&P to Winchester, but this may have been a W&P locomotive. There is no epistolary reference to activity in the locomotive enterprise during October and November. A letter written by Jackson on December 2nd reveals that other properties of the railroad had been absorbing the energies of his co-conspirator.[55]

A great mystery for years was the identity of the fourteen locomotives carried South. Now President Charles E. Fisher of the R&LHS has furnished a list, based on the notes of an old-time B&O engineer. A glance at the list, as it appears here, shows that the thirteen identified engines were: eight ten-wheelers of the Hayes and Tyson designs; three 4-4-0's on William Mason's pattern; one experienced 0-6-0; and one 0-8-0 fresh from the shops. Basis of selection is an open guess. Perhaps they were the least damaged units in the captured inventory; perhaps Dixie superintendents clamored for heavy power with pony trucks; or perhaps locomotives with leading trucks were the kind best suited to


CUMBERLAND
Potomac River
HANCOCK
WILLIAMSPORT
Northern Central R.R.
PIEDMONT
BALTIMORE AND OHIO R.R.
MARTINSBURG
SHEPHERDSTOWN
FREDERICK
B. & O. R.R.
BALTIMORE
ROMNEY
Potomac R. - South Branch
HARPER'S FERRY
POINT OF ROCKS
RELAY
WINCHESTER
WINCHESTER AND POTOMAC R.R.
LEESBURG
Potomac River
B. & O. R.R.
TURNPIKE
Shenandoah River
Alexandria, Loudoun and Hampshire R.R.
STRASBURG
PIEDMONT DEPOT
WASHINGTON
ALEXANDRIA
ALEXANDRIA R.R.
MANASSAS GAP RR
MANASSAS JUNCTION
MT. JACKSON
North Fork
Shenandoah - South Fork
WARRENTON
ORANGE AND
Potomac River
Rappa
AQUIA CRK.
Rapidan Rit
Rappahannock R.
FREDERICKSBURG
VALLEY
STAUNTON
GORDONSVILLE
VIRGINIA
CENTRAL R.R.
CHARLOTTESVILLE
No. Anna River
Fredericksburg & Potomac R.R.
VA. CENTRAL RR
Mattapony River
HANOVER JCT.
South Anna River
Pamunkey River
SHENANDOAH
ORANGE AND ALEXANDRIA R.R.
James River
WEST POINT
YORK RIVER R.R.
LEXINGTON
RICHMOND
Chickahominy R.
LYNCHBURG
Appomattox River
CITY POINT
PETERSBURG
VA. AND TENN. R.R.
SOUTHSIDE R.R.
DANVILLE R.R.
BURKES STA.
SOUTHSIDE R.R.
PETERSBURG & NORFOLK
RICHMOND AND
PETERSBURG R.R.
RAILROADS OF EASTERN VIRGINIA 1861
4'-8½" GAUGE
5'-0" GAUGE
N
10 0 10 20 30

the haul-away methods. Some might say that Sharp was trying to establish standardized "CSRA" designs. Unless their nameless fourteenth selection absolves them, the Confederates are charged with a cruel snub of their Baltimore partisan, Ross Winans.

It will be recalled that Engine No. 165 was thrown into the Potomac from the Harper's Ferry bridge. There is some conflicting evidence bearing on whether it did or did not remain on the river bottom until 1862 or later, but nothing that accommodates a firm verdict. Assuming that No. 165 belongs on Mr. Fisher's list (which otherwise is unchallenged by the known facts), it must have been fished from the river by B&O people before the Federal withdrawal about August 19th. Unneighborly artillery on Maryland Heights would have spoken out against Rebel attempts to raise the engine. If this theory is correct, it was still no easy matter to get the locomotive as far as Winchester. Thirty tons were too many for the W&P trestling. The line to Martinsburg was closed by the destruction of the bridges near Martinsburg and the trestling along the Potomac at Harper's Ferry. If the engine was towed over the highway to Winchester, the teams had to contend with stiff grades and poor surfaces. For a Winchester crow Harper's Ferry was only four miles farther away than Martinsburg, but kinks in the roads added six or eight miles to the difference. And Harper's Ferry was a dangerous place to work; twice during September there were skirmishes within the town, not to mention the ever-present batteries across the river. Perhaps it was here that the removal crew heard shots fired in anger.[56]

No. 199, another Hayes ten-wheeler, was the last locomotive to be carried off. It was at Strasburg in the spring of 1862. Johnston had withdrawn behind the Rappahannock, thus closing the Manassas Junction route. The big engine was sent by rail to Mount Jackson, end of the line for the Manassas Gap road. From Mount Jackson to Staunton the Valley Pike passed through fifty-two miles of country where rails were found only in fences. Many of the farmers who dwelt along the way never had heard the exhaust of a steam locomotive. Now it was their turn to witness Sharp's astonishing procession. Several bridges had to be stiffened for the burden, and the rougher country of the upper Valley made demands upon the ingenuity of the men. Speed was essential; with powerful loss lunging for Jackson from every direction, the crew did not have much opportunity for privacy on the Turnpike. Four days after it left Mount Jackson No. 199 was delivered to the Virginia Central at Staunton.[57]

Eleven of the twelve locomotives which reached Richmond later were sent to Raleigh, N. C., where Quartermaster-General Myers had established government repair shops. Backbone of these facilities was the $40,000 worth of tools and materials taken from the B&O shops at Martinsburg. In charge of the installation was nobody but Thomas Robinson Sharp. Here No. 188 was given the adornment which her graceful Mason lines recommended; with walnut cab and lavish embellishment she henceforth steamed proudly as the "Lady Davis." It is safe to say that the restored engines were sold, according to the practice of the Quartermaster Department, to the carriers most in need of them

for priority traffic. Gauge considerations probably steered most of them to roads in Virginia and North Carolina.[58]

The old engineer who preserved the list of captured locomotives noted that one of them, No. 34, went to sea. Its boiler was used to power a Confederate gun-boat which was sent to the bottom by the U. S. Navy. Thus it was the only one of the fourteen borrowed machines (including the two abandoned on the road) which failed to find its way back to the Baltimore and Ohio after the war. One of the P. O. W.s returned as a basket case, represented only by its boiler, while another came home without its tender. Most of the burned-out engines were back in service much sooner. Twenty-nine had been restored before October, 1862, and others awaited repairs.[59]

Edward Hungerford, in his Centennial history of the B&O, states, without naming his source, that immediately after Jackson's trap was sprung, four light locomotives and many cars were moved by rail to Winchester, thence in wagons to Strasburg. An operation of that sort may have kindled Imboden's erroneous impression that all of the halted trains were removed in this manner. The railroad did own several locomotives which would have been at home within the axle load limits of the Winchester and Potomac. However, the Thirty-Fifth and -Sixth Annual Reports designate as "lost to the Company" no engines other than the fourteen earlier mentioned. Of the thirteen identified only the little Baldwin would have looked comfortable on the W&P. It may be that B&O bantam-weights were borrowed to haul arsenal property or stolen cars from Harper's Ferry, but afterwards were left within reach of the owners.[60]

As for the cars, there is no doubt that a good number were brought off by the route Mr. Hungerford describes. The one-way flow of traffic from the arsenal must have placed many of them in Winchester, even if none were sent there for their own sake. Except for the 4½-ton iron hoppers, most freight cars weighed about two tons. They could be carted on the turnpike much more easily than the smallest of locomotives. Concerning the cars, there is very little authoritative information beyond this statement of Thatcher Perkins:[61]

> The Confederate forces while at or in the vicinity of Martinsburg, destroyed or seized a large number of our cars and appurtenances. I have account of 386 cars, including four passenger and one baggage car, which were burnt at Martinsburg, but have not obtained accurate information regarding the large additional number otherwise destroyed, removed from the road and lost to the Company.

For Tom Sharp, a railroad superintendent before the war, there was more to the B&O than its fine array of rolling-stock. Experience had taught him the value of less obtrusive components. The incidental fixtures of Mr. Garrett's railroad could serve the Confederacy well, but not where they lay. It was this appreciation which prompted him to appropriate the Martinsburg machinery.

Dear to Sharp's eye were the parallel miles of fine English iron, scarce in the South but here for the taking. B&O rails were not twisted nor wrapped about trees—common Civil War practices—but were sent intact to stockpiles at Winchester. In August and September the Rebels removed 36½ miles of B&O track (or 73 miles of rail, almost 4000 tons). This included all of the double-track line from Furnace Hill, on the west side of Harper's Ferry, to Martinsburg, plus additional track west of the latter. Along with the iron came the rail chairs, which in those days were used to join rail-ends. The cross-ties were burned.[62]

Sharp, seconded by the quartermaster-general, recommended that the rail be used to re-lay the track of the Winchester and Potomac, and to extend the line to Strasburg. Secretary of War Leroy P. Walker vetoed new construction, but gave the re-laying proposal his qualified approval. However, little was done to improve the vulnerable W&P. Later the rail was carried to a safer site.[63]

By the end of September the B&O was obliged to report that 102 miles of telegraph had been lost to the war. Some of the wire was in the Grafton area, beyond Sharp's range, while another portion had been cut up and discarded by parties interested only in disrupting communications. Still Sharp was able to offer Dr. William S. Morris a generous addition to his Southern Telegraph Company inventories.[65]

In October of 1861 Major-General Stonewall Jackson—such was his rank and such his epithet—took command of the newly created Valley District. The following month he established headquarters at Winchester. In December he was collaborating with Sharp to intensify the stripping of the B&O.

Sharp instituted a system of rail removal which might be described as a disassembly line. Only one line of the double-track west of Martinsburg would be taken up. He repaired a locomotive to pull a train of cars on the other. Using this train his crew could remove, he estimated, about a mile of track per day. On December 24th Jackson wrote Johnston that he had sent 10½ miles of track to Strasburg, and would send four miles more without delay. B&O statistics seem at variance with Jackson's; according to John Wilson, four miles of track were taken up in the last quarter of 1861, making a total for the year of 40½ miles, of which 37 miles were carried away.[66]

The Romney campaign, begun in December, is nowhere reckoned as Jackson's most brilliant. None the less, it was a cheerless episode for Messrs. Garrett and Smith. The expedition thwarted a plan of General Rosencrans to halt the depredations of Captain Sharp and to rescue for the Union its trunk line to the West. Jackson's movements kept most of the Federals on the north bank of the Potomac, thus exposing the railroad from Harper's Ferry to Cumberland.

Throughout the campaign and its prelude, the B&O was the target for repeated hit-and-run attacks by small detached forces. The sector between Hancock and the South Branch of the Potomac was the especial victim. Not much was added to Southern stockpiles—some lead pipe here, some telegraph wire there—but excessive damage was inflicted upon railroad facilities. All along the line water stations, coal bins, wood houses, sand houses, blacksmith shops, stationary engines, pumping

stations and miscellaneous adjuncts were destroyed. Crews struggling to repair the stricken road saw their work undone again and again. Bridges and temporary trestling lived a precarious life. Some spans, first smitten in June, now were brought to ruin for the second and third times.[67]

To the further embarassment of the B&O, counter-thrusts by United States forces wrought havoc upon its properties at several points. At Harper's Ferry Union troops burned everything that the Confederates had missed. Doomed by the conflagration were the water station, a warehouse, the Arsenal's boatway bridge, the woodwork of the Arsenal Yard trestling, and the company-owned Wager Hotel, which also served as the Harper's Ferry railroad station.[68]

Nor was this the sum of the railroad's woes. From August through the winter high water plagued the crews rebuilding bridges. Span after span was swept away, along with the loaded coal hoppers whose weight was supposed to secure the spans against the flood. The men were unable to manage the boats and barges required for their work. Heart-breaking set-backs delayed the difficult and costly restoration of the Harper's Ferry bridge. Snow, sleet and icy winds, which had turned Jackson's winter campaign into a frostbitten nightmare, chilled the bones and froze the tackle of B&O workmen.[69]

For Tom Sharp the Romney expedition was a mixed blessing. It allowed a month of grace for his track gang working out of Martinsburg. But Major John A. Harman, Jackson's fabulous quartermaster, was gravely ill, and for a time his duties were performed by Sharp. Surely the railroad project suffered by this diversion of his talents. To Sharp's credit, he filled the shoes of the gifted invalid to the complete satisfaction of the exacting Stonewall.[70]

Early in 1862 Northern armies began to stir. Jackson and Sharp were obliged to quit the line of the B&O. In February Jackson prepared to retreat from the lower Valley. The railroad would see more of Jackson later in the year. Sharp, putting predatory habits behind him, would go on to other work in the Quartermaster's Department. As the Confederates retired, B&O troops took the field, armed to build a railroad on a wasted right-of-way.

Who won?

Jackson and Sharp failed to crush the spirit of the Baltimore and Ohio management, but they must have upset its aplomb: the B&O report for the year ending September 30, 1861, was not submitted until 1863. In truth they had hurt the railroad, and by so doing had hurt the North. Not many railroads owned as much equipment as the B&O had lost. Since May 25th, when Bollman's Rock was dislodged, there had been no through service between Baltimore and points west of Harper's Ferry. Earnings on the main stem dropped more than $700,000 from the previous year in spite of an increase in passenger revenues begotten by heavy troop movements west of Cumberland. The Army of the Potomac would have been better served if there had been an open B&O line to the West to relieve the log-jam on the Pennsylvania Central—Northern Central artery.[71]

But Garrett, who had weathered the more dangerous attacks of Washington factions, was not to be brought low by Confederate soldiery. By March 29, 1862, his trains were traversing the full length of the main stem. The railroad gathered in every scrap of iron that the wreckage would yield, and sent it to melting furnaces at its Mount Clare Shops in Baltimore. By 1863 these shops had turned out 525 freight cars and were starting a new batch of two hundred. In its own shops and by purchase the railroad brought its locomotive roster back to strength. For the men of the Baltimore and Ohio, the Civil War was a four-year course in Calamity. They had passed the Freshman year. In 1865 they would graduate with honors.[72]

On the other face of the coin, Jackson and Sharp had made a magnificent contribution to the railroads of the South. The eleven locomotives at work on Rebel roads could move more than 50,000 tons of freight 25 miles every hour. The other railroad materials secured by their efforts were almost priceless in the non-industrial Confederacy. Yet it remains a fact that the resourceful pair had made their magnificent contribution to a rail system too poorly exploited to enjoy its full fruits.

Though the individual railroads and railroaders of the South toiled heroicly, coordinated transport never was realized. In Virginia the splendid soldiers of Lee fought on empty stomachs against fat Yankees at times when the preponderance of foodstuffs lay to the south, with rails running uninterrupted from lush field to picket line. Some explain that the South had no railroad wizards such as Haupt or McCallum. That is unfair to men like Wadley and Sims. Closer to the mark, the Confederacy had no Secretaries of War such as Cameron and Stanton. Whatever may be said of the two secretaries, they did bestow—whether or not it was theirs to bestow—the authority needed by a Haupt or a McCallum to make the railroads a decisive instrument of war. Every attempt to establish similar authority in the South ran head-on into States Rights, the central principle of Secession's political philosophy. However willing were Southern citizens to make every sacrifice, their state officials were reluctant to yield and Richmond was reluctant to encroach. True concert of action was achieved only in 1865, when railroads, armies, philosophy and Confederacy all collapsed in unison.

LOCOMOTIVES CARRIED SOUTH BY CONFEDERATES

No.	Builder	Year	Wheels		Cylinders	Weight	Type
34	B&ORR	1861	0-8-0	43″	19x22″	57,400	
50	Baldwin	1847	0-6-0	43″	13½x18″	33,000	
165	Denmead	1853	4-6-0	50″	19x20″	60,000	Hayes
166	Denmead	1853	4-6-0	50″	19x20″	60,000	Hayes
167	Denmead	1853	4-6-0	50″	19x20″	60,000	Hayes
188	B&ORR	1858	4-4-0	58″	16x22″	53,760	Mason
199	Denmead	1853	4-6-0	50″	19x20″	60,000	Hayes
202	Denmead	1854	4-6-0	50″	19x20″	60,000	Hayes
204	Denmead	1854	4-6-0	50″	19x20″	60,000	Hayes
225	Denmead	1857	4-6-0	50″	18x24″	60,000	Tyson
226	Denmead	1857	4-6-0	50″	18x24″	60,000	Tyson
231	Mason	1857	4-4-0	58″	16x22″	53,760	Mason
235	Mason	1857	4-4-0	58″	16x22″	53,760	Mason
?	Not identified						

Weights are approximates, but close enough to give an accurate notion of size. No. 34 apparently is an 0-8-0 built by the B&O in 1853, but rebuilt, reboilered and given a new-date in 1861.

NOTES—See Bibliography for Short Titles:

1. *B&L*, I, 118; Chambers, I, 316 ff. 2. *B&L*, I, 111-117. 3. *Ibid*, 121-122; Chambers, I, 322-324. 4. *B&L*, I, 122. 5. Vandiver, 132-133, 136. 6. Black, 1-48; Stover, 3-14; Coulter, 269-284. In the first half of the nineteenth century only the military academies offered engineering courses; Northern officers, with no plantation incomes to sustain them in the service, found a lucrative market for their talents on railroads North and South. 7. See Note 6, especially Black. 8. *American Railway Guide for 1851, 27;* Freeman, I, 683; Brown, 76; Black, 13, 302. W&P rail contrasts with the 50- to 60-pound T-rail in general use; the heaviest rail in the country weighed 70 pounds per yard. Mileages shown in this and other paragraphs often differ greatly from those shown in other accounts; where doubt existed, the author took comparative measurements from several plates in the *Official Atlas of the Civil War*. 9. Hall, II 458-461. 10. Engine and car totals as of *9/30/60, 34th An. Rpt.*

11. Motive power statistics are taken from a roster made up by R&LHS Pres. Charles E. Fisher from the *34th An. Rpt.*, with descriptions from the *29th*, and elaborated by the author with 92-122; *Papers Relative to Recent Contracts for Motive Power*, Baltimore, 1857, in which Tyson gathers together all the arguments and testimony for his side of the controversy. 13. Roster cited in Note 11; Oliver, 47. 14. *Annual Reports*, V&TRR, 1858, Va. Central R. R., 1861. 15. Owens, 1-4, 261, 271. Lincoln had attracted but 3% of the Baltimore vote. 16. Kamm, 9-11. 17. Summers, 48-59; Turner, 45-60; *OR* I, II, 597. 18. Owens, 284; *35th An. Rpt.*, 26. 19. Summers, 59. 20. *B&L*, I, 118-120; *OR* I, II, 624, 629.

21. Summers, 96-97. 22. *W. P. Smith Papers*, letter, Butler to Winfield Scott, 5/16/61; *Hotchkiss Papers*, Box 7, "Stonewall Jackson's Way"; *OR* I, II, 629. 23. *Baltimore Sun*, 5/27/61. 24. Chambers, 325-332; *OR* I, II, 809, 832. 25. Chambers, 333; *B&L*. I, 122. 26. *B&L*, I, 122-123. 27 *Ibid*., 123. Modern accounts of these events usually give Thursday, May 23rd, as the day the trains were stopped The *Baltimore Sun*, 5/27/61, states that they were stopped on Friday. Related events jibe with the *Sun's* date, and the author has found nothing to support the earlier date. 28. *Baltimore Sun*, 5/27, 28/61; *35th An. Rpt.*, 46. 29. *Baltimore Sun*, 5/27/61. 30. *35th An. Rpt.*, John L. Wilson, 46-48, and Thatcher Perkins, 57. Wilson's chronology indicates that at least one engine and a few of the cars shown in Perkins' figures were not among those trapped by Jackson. Also, any cars or locomotives recovered intact by the B&O would not appear in Perkins' list. The latter would include the "many coal cars" which the *Baltimore Sun*, 6/17/61, reported as rescued in mid-June.

31. Freeman, I, 683; Mordecai, 30. The locomotive figures are from Dr. Freeman, whose source was the *Report of the Board of Public Works of Virginia, 1859-60.* 32. *Baltimore Sun,* 5/27/61, 6/4, 1861. 33 Chambers, I, 341-353; *OR* I, II, 871-872, 877. 34. Vandiver, 151; *OR* I, II, 185. None was more assiduous in promoting his advancement than Jackson himself. 35. Johnston, 17-19. 36. *Ibid.,* 19-21. 37. *Ibid.,* 24; *Baltimore Sun,* 5/28/61, 6/6, 17/61. 38. *Jackson's Order Book,* Special Order, Johnston's HQ, 6/8/61. 39. Johnston, 28-29. 40. *35th An. Rpt.,* 47.

41. *Ibid.* 42. *Ibid.;* Johnston, 23. 43. *35th An. Rpt.,* 47; Johnston, 25; *Baltimore Son,* 6/22/61. 44. *35th An. Rpt.,* 47-48; *36th An. Rpt.,* 50; Johnston, 27-28; *OR* I, V, 587. 45. Johnston, 30; Turner, 76, quoting from Washington *National Intelligencer,* 7/12/61. The reporter was describing the scene all along the line; a few of the burned engines were at Duffield's, six miles west of Harper's Ferry, and the cars were strung out at various places between the Ferry and Martinsburg. 46. Johnston, 27-28. 47. *W. P. Smith Papers.* 48. *Biographical Directory of Railroad Officials of America for 1887.* Sharp's name appears frequently in the *OR's,* especially in letters covering his activities as a purchasing agent in England and British North America. 49. Hungerford, II, 10; *Locomotive Engineer,* November, 1889, anonymous article entitled, "Big Job of Moving Locomotives on Country Roads." The author evidently discussed the removal with John O'Brien. Though the article is burdened with error, it is the closest available contact with a participant in the operation. 50. Hungerford, II, 10-11.

51. *Locomotive Engineer, op. cit.* 52. *Ibid.;* Summers, 100, citing *Diary of Sarah Morgan McKown,* 8/22/61. 53. Hungerford, II, 11-12, 14; quote is from *Locomotive Engineer, op. cit.* 54. Hungerford, II, 12; *Locomotive Engineer, op. cit.;* Dyer, II, 895, 970-971. 55. Sources of letters: Jones, *W. P. Smith Papers;* Myers, *OR* I, LI, part 2, 248-249; Smith, *OR* I, V, 587; Ashby, *OR* I, V, 858-859; Sharp, *C. S. Secy. of War Papers,* Letter #8610 in Vol. 20, Register of Letters Received; Jackson, *OR* I, V, 976 56. Dyer, 970-971 57. Hungerford, II, 12-13. 58. *Ibid.,* 14; Bell, 52; Black, 102, 103, 169. 59. Hungerford, II, 14; *39th An. Rpt.,* 52. 60. Hungerford, II, 7; *B&L,* I, 123; *35th An. Rpt.,* 57; *36th An. Rpt.,* 66; *39th An. Rpt.,* 52.

61. *35th An. Rpt.,* 60. 62. *OR* I, LI, part 2, 258-259. 63. *Ibid.,* 248-249, 258-259; Black, 86-87. 65. *35th An. Rpt.,* 7; *OR* I, LI, part 2, 258-259. 66. *OR* I, V, 976; *Hotchkiss Papers,* Box 8, Jackson's letter book, Entry #19, 12/24/61; *36th An. Rpt.,* 25, 49, 67. *36th An. Rpt.,* 47-49; *OR* I, V, 976. 68. *36th An. Rpt.,* 49-50. 69. *Ibid.,* 47-49; *35th An. Rpt.,* 48. 70, *OR* I, V, 394. 71. *35th An. Rpt.* 13; 30; *36 An. Rpt.* 52. 72. *36th An. Rpt.,* 6; Owens, 285.

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Page 26—"The next one had, etc. . . ." *The Locomotive Engineer*, November, 1889.

Page 27—"At one place. . . ." The Locomotive Engineer, Nov., 1889.

Page 32—"The Confederate forces, etc. . . ." *The Thirty-Fifth Annual Report of the Baltimore and Ohio Railroad for the Year Ending September 30, 1861*, page 60.

Was B&O No. 165 carried South by the Confederates?

EXHIBITS:

Thirty-Fifth Annual Report of the Baltimore and Ohio Railroad for the Year Ending September 30, 1861:

Engine losses recorded by John L. Wilson, pages 47-48

June 13—Pillar Bridge at Martinsburg. . . . destroyed, and one engine and a number of cars run into it.

June 20—Winchester iron span. . . . (wood parts burned), and engine 165 run through the bridge into the Potomac River.

June, July—Engines and cars burned at Martinsburg, and engine, riggers' car and two gondolas burned at Piedmont.

Engine losses listed by Thatcher Perkins, page 57:

14 Locomotives and Tenders taken and transported South.

42 Locomotives and Tenders burned.

2 Locomotives and Tenders thrown into the Potomac River, and seriously damaged, and a part of the machinery of nine other Engines taken off and carried South.

Thirty-Sixth Annual Report (Yr. Ending 9/30/62)

From report of Thatcher Perkins, Page 66. The 14 locomotives and tenders taken by the enemy prior to September 30, 1861, were entirely lost to the Company. Twenty-nine of the locomotives and tenders burned were repaired, while the others awaited repairs at the close of the fiscal year.

Baltimore Sun, 6/22/61 (describing occurrences on Wednesday, 6/19/61) . . . They next went to work on the Potomac (Baltimore and Ohio railroad) bridge and threw into the river a fine and very large locomotive that had been left (because too large to be carried off on the Winchester railroad) when Johnston's army retreated on the only span of the bridge that was not burnt on the morning of the evacuation—it being an iron span, it will be recollected. They accomplished that work of destruction—throwing the locomotive into the river—by the use of crowbars, etc.

Nathaniel Hawthorne visited Harper's Ferry sometime between the completion of General Banks' pontoon bridge (2/26/62) and the reopening of the railroad bridge (3/29/62). He wrote in the *Atlantic Monthly*, Vol. 10, No. 57, July 1862, page 53:—

. . . . The broken bridge of the railroad was a little below us, and at the base of one of its massive piers, in the rocky bed of the river, lay a locomotive, which the Rebels had precipitated there.

First assume that Wilson was correct in identifying the locomotive pushed off the Harper's Ferry bridge as No. 165. This is no more than an assumption, for the confusion at H. F., or the long stretch of time between the event and the publication of the report could have caused him to err. Engines were not Wilson's first concern. On the other hand, he must have had plenty of opportunity to observe the soggy locomotive as he pondered the matter of his poor bridge. He himself may have ordered its removal from the river to facilitate the work of his crews.

Now consider Perkins' list. Were the separate categories exclusive? Or were all or some of the 14 stolen engines included in the 42 burned and two dunked? It is probable that the nine from which "part of the machinery" was removed were included in the forty-two. But it is probable also that otherwise the categories were exclusive. The 29 locomotives restored by 9/30/62 plus the 14 "entirely lost to the Company" make a total of 43, without counting the "others" which awaited repairs.

If Perkins' categories were exclusive then the two engines dropped into the Potomac were not a part of the 14 abducted.

Now I have proved beyond a shadow of a doubt that No. 165 does not belong on the list of stolen locomotives—except that I have not convinced myself. Of course, the case for exclusiveness is no more watertight than No. 165, which showed no signs of floating down the river.

But where was the other victim? Wilson did not tell us that an engine entered the Potomac at some other point. He mentioned no second immersion or attempted immersion at Harper's Ferry until 9/24/62, when the railroad found No. 30 hanging in the trestlework at the west end of the H. F. bridge. Nor have I seen any other report that an engine was thrown into the river there. Wilson did say that a locomotive was run through the Pillar Bridge at Martinsburg. I think—though I may be wrong—that this bridge was one of the four Tuscarora Creek crossings. The Creek was no majestic stream, but I believe that there was enough water in it to get an engine wet. Perhaps this was Perkins' second water-logged locomotive. Still I must admit that the Pillar Bridge casualty could just as well have been counted among the 42 burned.

Surely No. 165 was not ready for a builder's photo or a dynamometer test after its plunge to the rocky bottom and its sojourn in the drink. And getting a locomotive out of Harper's Ferry was a much more staggering proposition than moving one from Martinsburg (See MS, pages 29-30). Why, then, would the Rebels be so zealous to make off with this specimen before the supply at Martinsburg was exhausted?

It seems certain that the engine discussed by the *Baltimore Sun's* correspondent was the one identified by Wilson as No. 165. The simple tools employed by Steuart's men (crowbars, etc.) lead one to believe that the locomotive went off the end of the iron span rather than over the side. Thus it would fall close to the north side of the out-size, odd-shaped pier near the West Virginia shore. Since there has been no mention of a second victim at the H. F. bridge, nor any notice that the first victim was rescued, it is not unreasonable to wonder if Nathaniel Hawthorne was looking at No. 165 "at the base of one of its massive piers."

It is possible, to be sure, that the Confederates pushed another locomotive into the river at that point after they made off with No. 165. They must have kept a few in Harper's Ferry after they destroyed the bridges near Martinsburg; otherwise there would have been no burned engines at Duffield's.

I myself feel certain that No. 165 was one of the kidnapped machines. But I also think that contrary evidence is much too strong to be passed by unremarked.

The Railroads of Guatemala and El Salvador

By Gerald M. Best

The railroads in the Central American republics of Guatemala and El Salvador are all 3 ft. gauge, and comprise a network of approximately 1000 miles, including branch lines. The largest unit of this system, known to U. S. travelers and natives alike as "IRCA," is the International Railways of Central America, although the official name in Spanish is Ferrocarriles Internacionales De Centro America, and the equipment is all lettered "F. I. de C. A."

IRCA's only connecting railroad, outside the standard gauge National de Mexico's track across the river at Ayutla, is the Ferrocarril De El Salvador, or Salvador Railway Co. Ltd., which connects with IRCA at the capital city of San Salvador, and in El Salvador's second largest city, Santa Ana. The third railroad in the two countries is the little known Ferrocarril Verapaz, which wends its isolated way from Panzos, on the Polochic River, to Pancajche, 28 miles up river.

Until very recent years, all these railroads were steam powered, and while dieselization is progressing on IRCA at a fairly rapid pace, there is still a considerable roster of active steam locomotives. For years I have listened to the often expressed opinion that Mexican and Central American steam power was largely second-hand from the United States. While Mexico has received some hundreds of second-hand U. S. engines from time to time, nothing could be further from the truth in the case of Guatemala and El Salvador, where the number of second-hand engines brought in from the U. S. could be counted on the fingers of one hand. It was partly to explode this myth that I made a number of trips to Central America, to photograph the locomotives and rolling stock of the above mentioned roads, and to compile rosters of their locomotives, to learn the details of the roads' history, and above all to ride the trains wherever passenger service was available.

Unfortunately, while data on the locomotives was available through the courtesy of the managements of the two principal railroads, the early history of the roads was not. It was therefore necessary to research various U. S. Govt. publications of the past 75 years, and to rely on the records of U. S. locomotive builders for information not known by the present managements. In an effort to make this compilation as simple and easy to follow as possible, the predecessor roads of IRCA will be listed separately, with short historical sketches of each. There have been several excellent articles on IRCA in railroad publications in the past ten years, notably Philip T. Leonard's story in Trains Magazine, and it is not my intention to describe the operating details of IRCA today, as the railroad is there for anyone who does not mind an eight-hour airplane ride, to see for himself.

Bordered on the north by Mexico, and on the southeast by El Salvador and Honduras, Guatemala has every type of climate known to semi-tropical regions. With the Pacific Ocean bordering the southwest, and the Caribbean Sea on the northeast, the coastal regions are warm and humid, with frequent rains, and contain a mass of green vegetation

which is hard for anyone to picture unless he has actually seen it. The central region of Guatemala is high, the main plateau averaging 5000 ft., and the surrounding mountains, mostly of volcanic origin and some of them still very active, abound with lakes and magnificent vistas which are familiar to the host of travelers who have come to Guatemala through the years.

Lower in average altitude but no less mountainous is the smaller republic of El Salvador, which has southern frontage on the Pacific, an eastern and northern border with Honduras, and a northern and western frontier common with Guatemala. It has no Atlantic seaport, and its products must either be exported from its three Pacific seaports, or shipped overland through Guatemala to Puerto Barrios. Prior to 1879, neither country had any railroads. The transportation was primitive, with stage lines from the seaports of Santo Tomas on the Caribbean, and San Jose on the Pacific, to Guatemala City in the highlands. Similar stage lines ran from La Libertad, nearest Pacific port to San Salvador, to the capital, and from La Union on the Bay of Fonseca, to San Miguel and other towns in southeastern El Salvador. The first efforts to develop a railroad in either of these countries were made by well-known Californians. Veteran railroad builders C. P. Huntington and Timothy Hopkins, of Central Pacific and Southern Pacific fame, organized the Guatemala Central Railroad Co. under the laws of California on Oct. 12, 1878.

GUATEMALA CENTRAL RAILROAD COMPANY:

Engineered and built by C. P. Huntington's experienced group of surveyors, foremen and managers, all brought down from San Francisco by steamer to the port of San Jose de Guatemala, this 28 mile line was completed, to a gauge of one meter, in less than a year after construction started in the summer of 1879. The first 20 miles was through the Guatemalan lowlands, with a grade ascent of only 400 feet, but the following 8 miles to Escuintla, at the foot of the steep slopes of the Pacific range required a grade of an average of 100 feet per mile, with a 3.1% grade in the last 3 miles. The line opened a rich agricultural region, and was completed and placed in operation to Escuintla on June 20, 1880. Two new Baldwin engines, a 2-6-0 and a 4-4-0, were loaded at San Francisco, and arrived at San Jose in January of 1880.

Within a year, Escuintla had become a busy railhead, but the stage and freight wagon trip to Guatemala City, up the winding and very bad road to the capital, restricted traffic to such a degree that within two years, a new company was brought into the picture.

CENTRAL AMERICAN AND PACIFIC RY. & TRANSPORTATION CO.:

Chartered in California on May 23, 1882, with the same officers as the Guatemala Central R. R. Co., this projected line from Escuintla to Guatemala City, a distance of 48 miles, was no easy task. As laid out by Huntington's surveyors, it was necessary to go from an elevation of 1112 ft. at Escuintla, to 3697 ft. at Palin, a distance of 16 miles. Grades of from 3.0 to 3.7% were maintained by means of many reverse

curves, through deep cuts in the volcanic rock, and fills or trestles across the ravines. From Palin to the nearest point on Lake Amatitlan was an easy grade, then a relatively level track for 9 miles along the lake shore, and finally a 13 mile grade averaging 2.2% to Pamplona, a suburb of Guatemala City, at an elevation of 5000 feet, and down a 1.5% slope into the heart of the capital.

In spite of the difficult terrain, the line was finished in a remarkably short time, and the first train from San Jose entered Guatemala City on Sept. 9, 1884. The total cost of the entire line from San Jose to Guatemala City was $1,500,000, a small fraction of what a similar standard gauge line would have cost in the U. S. during that era. For the first time, the highlands of Guatemala were opened to tourists from the U. S., through convenient steamer connections to San Jose from San Francisco. To cater to these tourists, the San Carlos Gran Hotel was built and opened in 1884, and 75 years later it is still in operation. The gauge of the new line was one meter, and four new Cooke consolidations, plus a second-hand Baldwin 4-4-0 from the Santa Cruz R. R., one of the Southern Pacific's subsidiaries in California then being standard gauged, comprised the motive power of the new section. Rolling stock was all built either by the Kimball Mfg. Co. in San Francisco, or at the Central Pacific shops in Sacramento.

GUATAMALA CENTRAL RAILROAD:

A consolidation of the two railroads comprising the San Jose to Guatemala City line was inevitable, and was made under a new California charter granted on Oct. 20, 1885, the only difference in the name being the elimination of the word "Company." Traffic rapidly increased over the following four years, and by 1889 it was necessary to order additional locomotives and rolling stock. In the meantime, the Guatemalan Govt. had begun a railroad from the Atlantic seaboard towards Guatemala City, with a gauge of 3 feet, and no doubt because of this fact, and also that considerable second-hand rolling stock in 3 ft. gauge was being offered in the U. S., it was decided to narrow the gauge of the Guatemala Central to 3 ft., which was accomplished in 1890 after the new locomotives and some cars of 3 ft. gauge had been received. This ended meter gauge in Central America except for one or two isolated private railroads further south. In 1889, the road reported a net profit of $400,000, which increased each year during the 1890s. In 1893 and 1894 a branch was constructed northwest from Santa Maria, a point between Escuintla and San Jose, to the city of Mazatenango, a distance of 62 miles. There it connected with another 3 ft. gauge line then building towards Mazatenango, the Ferrocarril Occidente, or Guatemala Western. On June 8, 1904, the Guatemala Central Railroad was merged with a number of other lines to form the Guatemala Railway Co.

CHAMPERICO & NORTHERN TRANSPORTATION CO.:

Encouraged by the success of the Guatemala Central, another California Company, not controlled by the Huntington group, was

chartered under the above name on Mar. 12, 1881, to open up the coastal plain in the vicinity of the city of Retalhuleu. A 3 ft. gauge line was built from the port of Champerico, on the Pacific, to Retalhuleu, a distance of 27 miles. Track construction was very light, and apparently little grading was done, as a description of the line made by a San Francisco visitor shortly after it was completed noted the rollercoaster effect of following the contour of the landscape, with no cuts or fills. The line was completed to Retalhuleu in July, 1883, and was powered by three locomotives, one of unknown description brought in by the contractors, and two new Baldwin moguls purchased in 1882 and 1884.

GUATEMALA WESTERN (FERROCARRIL OCCIDENTE DE GUATEMALA):

Financed with German capital, this company was organized in Guatemala in 1888 by a group called "Guatemaltico." With a capital stock of $1,500,000 paid in, the Champerico & Northern Transp. Co. was purchased for $800,000. Between 1889 and 1894, a 14 mile extension was built between Retalhuleu and Mazatenango, where it connected with the new line the Guatemala Central was just completing from Santa Maria, on the San Jose-Guatemala City main line. On June 8, 1904, the Occidente was taken over by the newly formed Guatemala Railway, but was operated as a separate company until 1944, when it was merged into the corporate structure of the International Rys. The rolling stock, however, was lettered Guatemala Ry. after 1908, and was included in that road's numbering system.

FERROCARRIL OCOS:

This railroad was also 3 ft. gauge, projected in 1894 and built during the following three years from the newly opened seaport of Ocos, at the mouth of the Suchiate river, on the Pacific ocean, to the town of Vado Ancho, a distance of 22 miles. For the first 13 miles the line followed the bank of the river to Ayutla, later to become the exchange point for passengers and freight for IRCA, and then turned east to Vado Ancho. Its motive power consisted of two Rogers 4-4-0s built in 1896 and 1897, and a secondhand Baldwin saddle tanker. It was the only railroad in the extreme northwestern tip of Guatemala until many years later, when a connecting line made it a part of the Guatemala Railway system, with which it was merged on June 8, 1904.

GUATEMALA NORTHERN (FERROCARRIL DEL NORTE DE GUATEMALA):

The "Northern" was the first organized effort at railroad building on the part of the Guatemalan Government, and was decreed by official proclamation to be built from Santo Tomas, a port on the Bahia de Amatique, on the Caribbean side of the country, to Guatemala City, a distance of 182 miles. This decree, issued early in 1883, called for a 3 ft. gauge line which would not only open up the rich agricultural lands along the Atlantic seaboard, but would afford an easy route by connecting steamers to the U. S. and Europe.

In December, 1883, work was begun at Santa Tomas, but after 4 miles of track was laid into the jungle, work ceased in early 1884, and nothing further was done to complete the road for six years. The failure of the contractor to bring in rails and other supplies, the unsettled condition of the country politically at that particular time, and the lack of outside capital all conspired to bring construction to a halt. The two little Baldwins, a 2-8-0 imported in Feb. 1884, and an 0-4-4 Forney a year later, had very little to do. In 1890, a French syndicate entered into a contract with the government to complete the road, and to establish an agricultural bank. But work through the jungles of the lowlands proved slow and expensive, and the first 100 miles to Zacapa required nearly ten years to complete.

Late in 1899, the United Fruit Company was organized in the U. S. as a consolidation of a number of banana producing companies operating in various Central and South American countries. With the financial aid of this new company, the Guatemala Northern was to become an important link in United Fruit's banana empire. The 94 miles from Zacapa to Guatemala City consisted of a relatively easy construction problem as far as the town of Rancho, where it was necessary to leave the valley of the Motagua River, which the line had followed most of the way from the seacoast. But from Rancho, 33 miles west of Zacapa, to the summit of a pass through the mountains at Menocal, there was 57 miles of cuts, fills, trestles and difficult railroad construction.

While the first 7 miles west of Rancho required a grade of 3.3%, the engineers were able to limit the long grade from Cucajol to Menocal, a distance of 23 miles, to 3%. The work on this section was completed in 1903, and a continuous railroad from the Atlantic to the Pacific was in being. At this time, the Guatemala Railway was formed.

GUATEMALA RAILWAY:

Organized June 8, 1904, the Guatemala Ry. was a consolidation of the Guatemala Northern, Guatemala Central, Guatemala Western and the Ocos Ry. The corporate structure was such that each road retained its original identity, and it was not until 1912 that all the companies were consolidated into one unit. But physical consolidation of the equipment did take place in 1904, and the cars and locomotives were relettered and renumbered, and pooled for the best operating efficiency. The line extended from Puerto Barrios, modern name for Santo Tomas, on the Caribbean, through Guatemala City to San Jose on the Pacific, with the line to Mazatenango, Retalhuleu and Champerico branching off at Santa Maria. The Ocos Ry. continued as an orphan, separated by 32 miles from the nearest point on the Guatemala Ry. Incorporated in New Jersey, with headquarters in Jersey City, and with operating control vested in the United Fruit Co., the Guatemala Ry. enabled the country to develop rapidly as a major producer of coffee and bananas. A network of branches, owned outright by United Fruit, and operated under the name of "La Compania Agricola De Guatemala," was built from the town of Rio Bravo on the Mazatenango line, to Tiquisate, and in the Atlantic lowlands another branch owned by United Fruit was built from

Bananera, a distance of 24 miles to another junction with the Guatemala Ry.'s mainline at Quirigua Jct. These lines were powered by locomotives owned by United Fruit Co., and a separate list of these engines is given in locomotive summary.

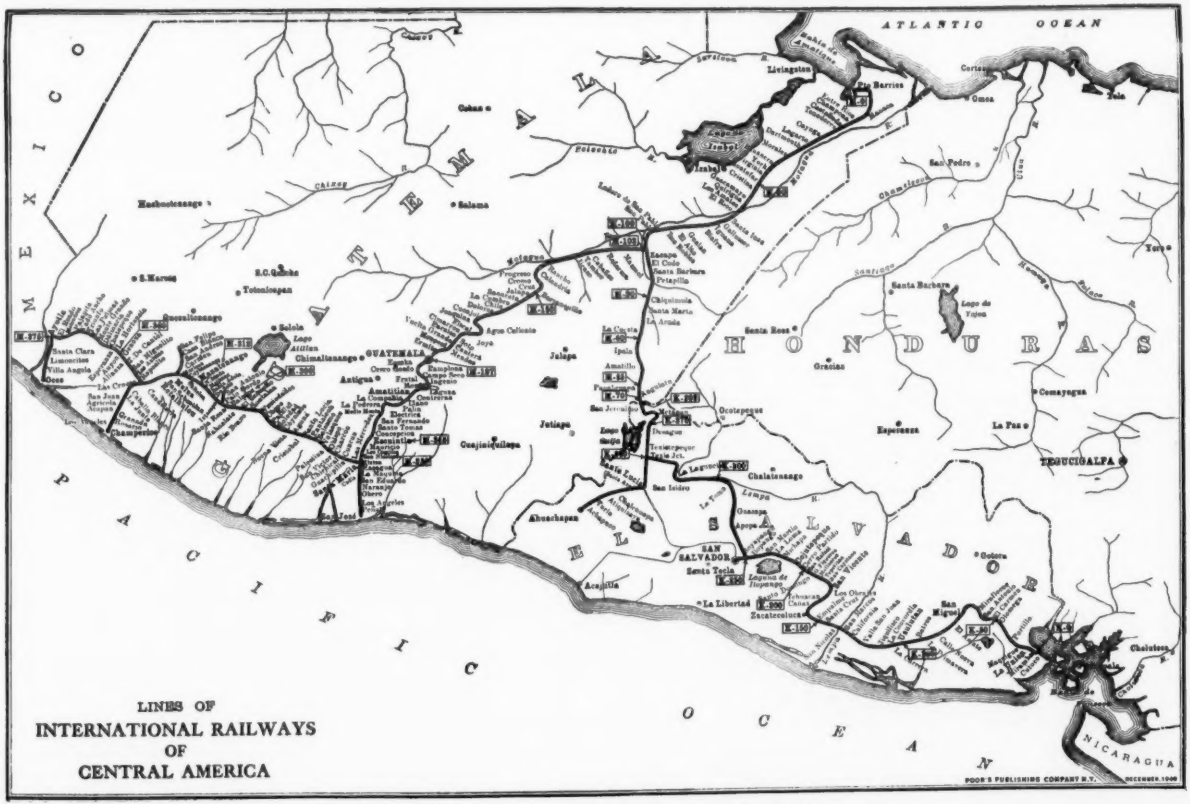
For the first time, tourists from the Atlantic seaboard of the U. S. could reach Guatemala City by steamer to Barrios, and a day's scenic train ride in comfortable accommodations. On April 19, 1912, the Guatemala Ry., its controlled lines and others acquired soon thereafter, were taken over by a new company, the International Railways of Central America. Before outlining the scope of this new company, it is necessary to digress and review railroad developments in Guatemala's southeastern neighbor, El Salvador.

SALVADOR CENTRAL RY. (FERROCARRIL CENTRAL DE EL SALVADOR):

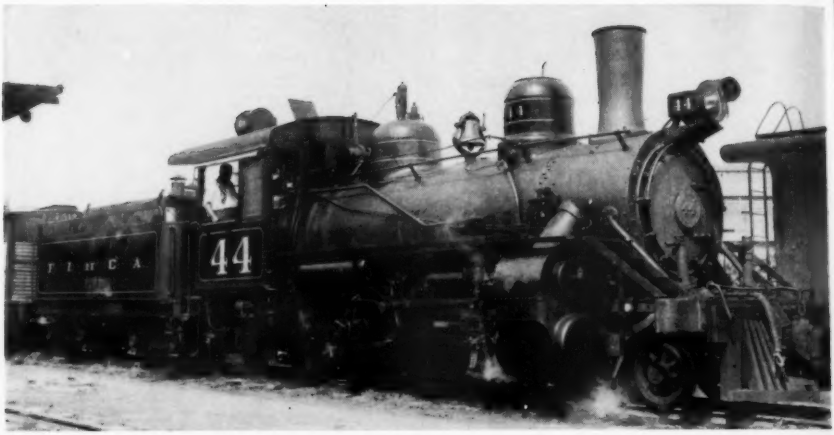
In 1888, a group of New Yorkers under the leadership of Daniel Butterfield Crocker, organized a company of the above name, to build a railroad from the seaport of La Union, on the Bay of Fonseca in El Salvador, to San Salvador, thus opening up the country between the two cities, a distance of 156 miles. They obtained a concession from the El Salvador government of $10,000 a mile, and completed a survey to the capital in 1890. Disagreement among the organizers resulting in the sale of the company to C. P. Huntington, who advanced sufficient cash to start construction in 1893 from La Union, of a 3 ft. gauge line which reached the city of San Miguel, 42 miles inland, in 1897, and there construction of the Salvador Central ceased. This was El Salvador's second railroad, the first being the Ferrocarril De El Salvador, which will be described in another section. The contractors, Thornton N. Montley & Co., acquired a new Rogers 2-6-0 in 1895 to become the road's first locomotive, and in May 1897, Baldwin built a 2-8-0, which with the Rogers engine comprised the road's roster of locomotives until after consolidation with IRCA, which took place on April 19, 1912.

INTERNATIONAL RAILWAYS OF CENTRAL AMERICA:

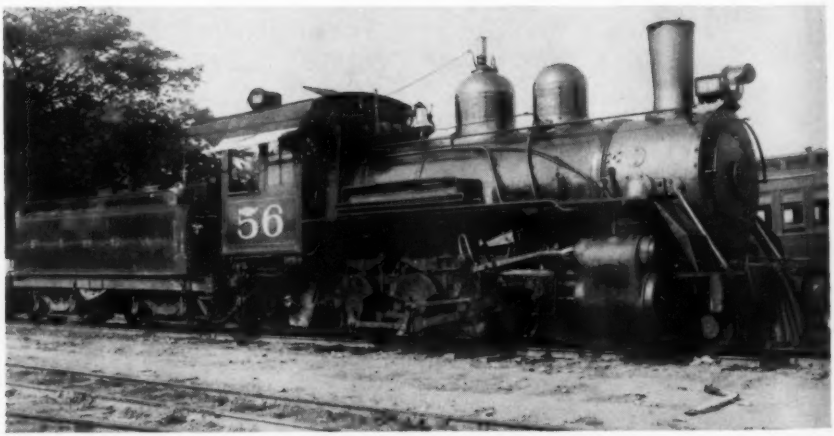
Organized on April 19, 1912 as a New Jersey corporation, the new company, with Minor C. Keith, also President of United Fruit, as the President, took over the properties of the Guatemala Ry., and purchased the Central De El Salvador. One of the principal reasons for the formation of the new company was to permit construction of lines in El Salvador which would link that country with the Guatemalan port of Barrios. Aided by a subsidy of $7,000 per kilometer, from the government of El Salvador, and $7,320 per km. from the Guatemalan govt. for that portion of the new line from Zacapa to the border, surveys were begun immediately. In addition, an extension of the lines in western Guatemala to connect with the National Rys. of Mexico was planned. A line known as the Pan-American was being built to standard gauge in the Mexican State of Chiapas, from a connection with the Tehuantepec National at Ixtepec, in the city of Tapachula, southernmost city of Mexico's Pacific Coast, with a branch from Tapachula to a point on the Suchiate river directly across from the Guatemalan town of Ayutla.



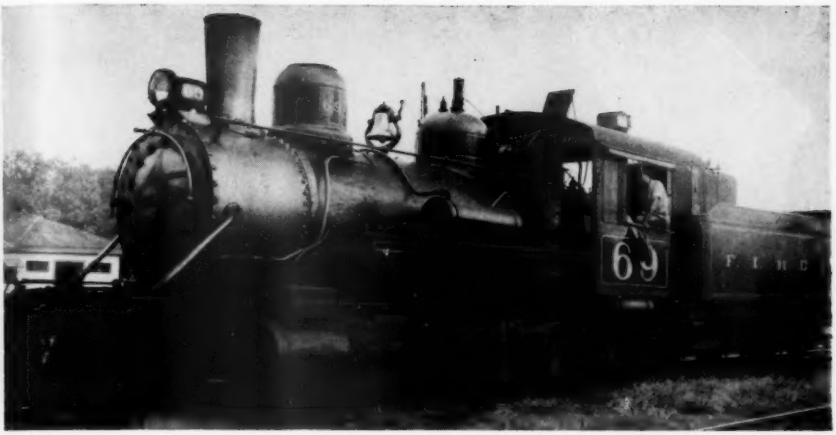
Map of the I. R. C. A. Lines in Guatemala and El Salvador.



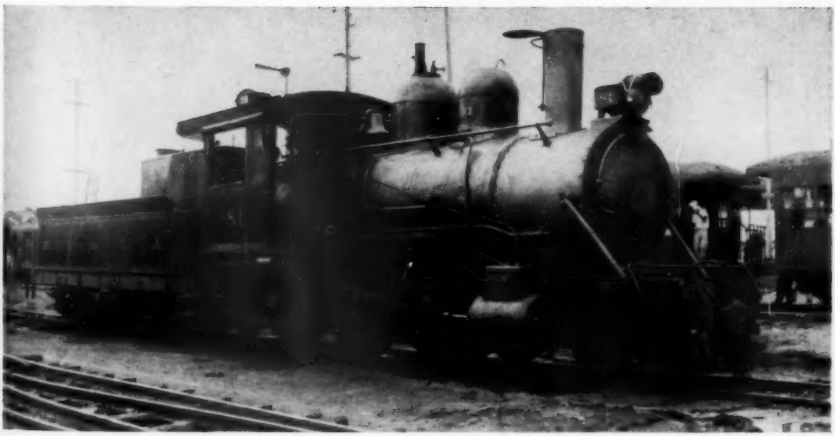
I. R. C. A. #44 at San Salvador, Sept. 30, 1955.



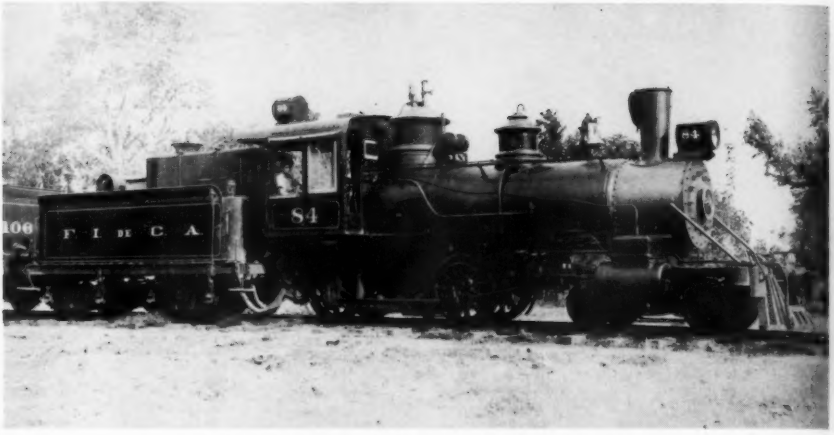
I. R. C. A. #56 at Zacapa, Guatemala, Apr. 30, 1952.



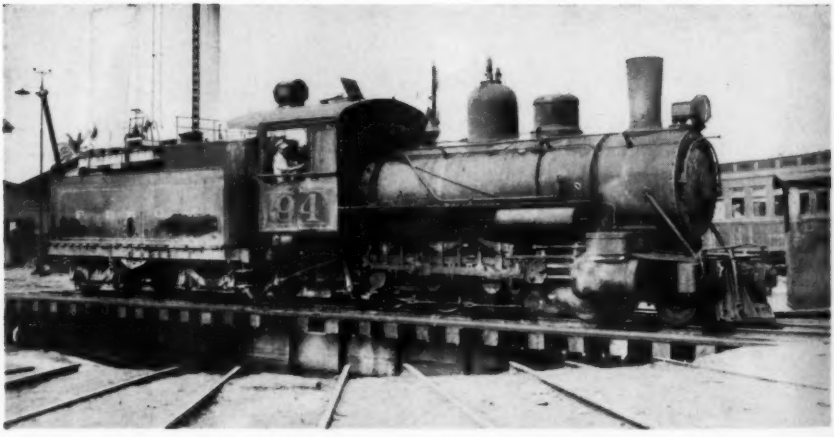
I. R. C. A. #69 at Escuintla, Guatemala, Oct. 26, 1956.



I. R. C. A. #81 at Mazatenango, Guatemala, May 3, 1952.

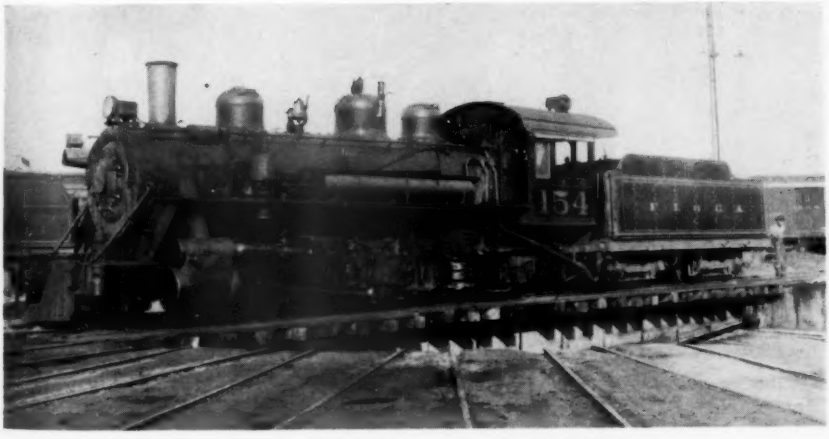


I. R. C. A. #84 at Ayutla, Guatemala, Mar. 28, 1946.



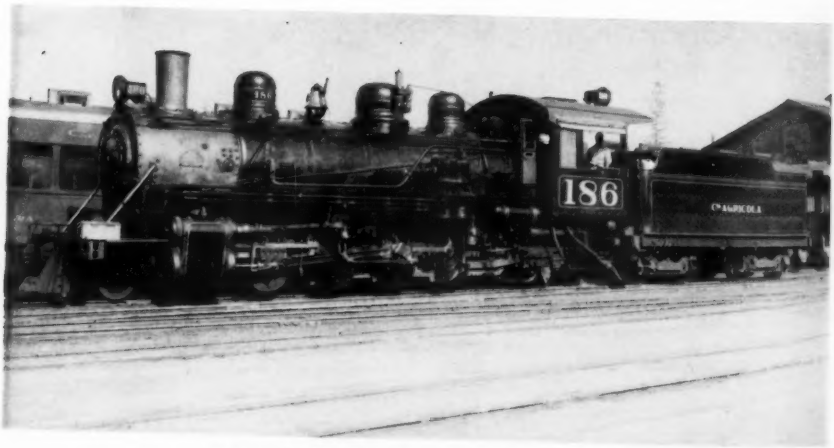
I. R. C. A. #94 at Guatemala City, Sept. 26, 1955.

I. R. C. A. #129 at San Salvador, June 6, 1953.



I. R. C. A. #154 at Guatemala City, May 2, 1952.

I. R. C. A. #168 at Guatemala City, Sept. 28, 1955.



I. R. C. A. #186 at Guatemala City, Sept. 28, 1955.

One of the first acts of the new company was to completely rebuild the poorly constructed and maintained Central De El Salvador, from Cutoco on the Bay of Fonseca, through La Union to San Miguel. This work was completed in 1912, and construction was immediately begun towards San Salvador. In the first year, an additional 42 miles was built, for in December 1913, the line had reached the Lempa River crossing at the town of San Marcos. But World War I brought the work almost to a standstill in 1914, and only 14 miles of new track was laid during the 1914-16 period, the crews reaching Zacatecoluca in December 1916. In 1917 and 1918, while the U. S. was geared for the war overseas, only 12 additional miles to Molineros was completed, but in 1919 the track was laid through Santo Domingo to San Rafael Cedros, it passed through the city of Cojutepeque in 1920, and reached San Salvador in December 1921. The first through train from La Union was run March 12, 1922.

In the meantime, the connection of the isolated Ocos Ry. in northwestern Guatemala, to the newly formed IRCA progressed rapidly. Work was begun early in 1912 from the town of Las Cruces, 9 miles west of Retalhuleu, towards the Ocos terminal at Vado Ancho. By the end of 1912, 14 miles had been completed, and the finished job of 30 miles total was turned over to the operating dept. in Dec. 1913.

In Mexico, the Pan-American division of the National Rys. had been completed to Tapachula, and a 26 mile branch line of light construction had been built to the edge of the Suchiate river, directly opposite Ayutla in Guatemala, in anticipation of an interchange of freight and passengers. First named Mariscal, this Mexican terminal consisted of a small dock, where lighters ferried the traffic across the river, and a few houses for employees. Later the name of the town was changed to Suchiate, and in 1957 it became Ciudad Hidalgo.

But the ferrying of goods across the river was slow; in flood season it was a very risky business, and at best it required the unloading and loading of each item twice. In the first year of World War II, due to the scarcity of shipping, better connections for rail shipments through to the U. S. became imperative, and with U. S. assistance, an international bridge was placed across the river between Suchiate and Ayutla, and freight was thereafter trucked across a loading platform in Ayutla, between the freight cars of the two gauges. Bananas and coffee were the principal commodities shipped in carload lots to the U. S., and some mornings during the war, the mixed train from Suchiate to Tapachula would haul ten to a dozen refrigerator and box cars, which would eventually reach the U. S. at Laredo or El Paso, Texas. But the bridge was of little help to the passengers, and to this day it is necessary for adventurous passengers to walk across the railroad bridge, carrying their own baggage (unless they were lucky enough to find a porter and his wheelbarrow). As a result, most travellers either take the busses on the main highway via Quezaltenango and Malacatan into Tapachula, or use the planes.

Returning to the operations in El Salvador, as soon as the war in Europe was over in 1918, IRCA laid plans to connect the lines in El Salvador with those in Guatemala by constructing a 161 mile link be-

tween the town of Zacapa, on the Barrios-Guatemala City line, and Soyapango, four miles east of San Salvador on the La Union line, which was still four years from completion. To reach San Salvador from Soyapango it was necessary to cross a narrow river canyon, involving two miles down the east bank of the river, then a 180 degree turn with a bridge in the center, and two miles up the west bank to the plateau on which the city was located. Hence San Salvador is in effect at the end of a 4 mile branch extending west from Soyapango.

Early in 1920, actual construction was begun towards Zacapa, and in the following six years, the line was completed to Texistepeque, with a branch from that point southwest through the city of Santa Ana to the town of Ahuachpan. Santa Ana was already served by one railroad, the Salvador Ry. Co. Ltd., thus providing the city with the benefits of competition, and at a later date, an outlet to the Atlantic seaboard. In 1926, the line was extended from Texistepeque to the town of San Jeronimo, on the Guatemalan border, and since the line from La Union to Soyapango had been finished four years earlier, El Salvador at last had a railroad from one end of the country to the other.

In the meantime, work had begun on the very difficult section from Zacapa south to the El Salvador border in 1923, only to be halted soon after by disagreement between the engineers and management over the choice of routes. In 1925, these difficulties were ironed out, and construction began in earnest, and except for completion of certain tunnels, was finished in 1928, although final junction of the rails and the running of the first through train did not occur until Dec. 1929.

The cost of the line from Zacapa to Anguiatu, across the border from San Jeronimo was $12,000,000, and while the first 18 miles out of Zacapa to Chiquimula, with a grade of less than 40 ft. per mile involved little expensive construction, the next 26 miles was a different matter. From Chiquimula to Ipala, the line ascended from 1250 to 2950 ft., and bears a striking similarity to the north half of the Southern Pacific's line through the Tehachapi Mountains in Southern California, with its loops, tunnels and sharp curves. The ruling grade is 2.8% between Tres Ceibas and Chaguite, with long sections of 2.4% on both sides. Completion of this line enabled shippers in El Salvador to send bananas, coffee and other products to Puerto Barrios via Zacapa, and a daily mixed train has been in operation from San Salvador to Zacapa since 1929.

This ended new construction on the IRCA system, although in 1955, the government developed port of Santo Tomas (old name for Puerto Barrios), six miles from Barrios, was connected with IRCA by means of a spur track. At this writing, United Fruit Co. owns 40% of IRCA, the balance being held by U. S. investors, who have received no dividends on the common stock for many years. The coffee and banana business accounts for 50% of the total receipts, the passenger traffic contributes 30%, and the balance comes from miscellaneous freight. Key management positions are held by railroad men from the United States, Canada and England, while the operating employees are natives of the two countries.

Since 1948, when the National Rys. of Mexico standard gauged its Mexico City-Vera Cruz line, IRCA has been the largest 3 ft. gauge railroad in North America, and since 1948, abandonments or standard gauging of 3 ft. lines in the U. S. and Mexico has increased the ratio.

SALVADOR RAILWAY CO. LTD. (FERROCARRIL DE EL SALVADOR):

This 3 ft. gauge line, the most interesting of all Central American railroads, was the first in El Salvador. It extends from the seaport of Acajutla, on the Pacific, to San Salvador, 103 kilometers, with a branch from Sitio Del Nino to Santa Ana of 40 km.

The westernmost 20 km. of the main line was built as the Acajutla & Sonsonate R. R., in 1881 and 1882. Its equipment all came from San Francisco, the two 4-4-0 locomotives having been built by Prescott, Scott & Co., predecessors of the Union Iron Works, and the rolling stock came from Bay area builders. In 1883, the Santa Ana Ry. was projected, from Santa Ana to San Salvador, and was completed between the two cities in 1889. These two railroads operated independently of each other, the Acajutla & Sonsonate being used for hauling sugar, coffee and the other products of the fertile basin around the city of Sonsonate, to the docks at Acajutla.

In 1895, a British company was formed under the name of the Salvador Central Ry. Ltd., and by taking over both railroads by outright purchase, and building a connecting link of 47 km. between them, it gave San Salvador its first rail connection with a seaport. This new line was built under the name of the Acajutla-San Salvador Ry., but in 1897 the entire system, upon completion of the connecting link, was consolidated under the name of Salvador Ry. Co. Ltd. The Santa Ana Ry. locomotives and rolling stock were U. S. built except for a few passenger coaches imported from England, and the new company purchased additional Baldwins in 1896 and 1897, but imported all its new rolling stock from England. Except for additional locomotives from Baldwin in 1910 and 1925, this road operated until 1951 with all its original motive power and rolling stock except for one 4-4-0. Nine railmotors built in the Sonsonate shops augmented the passenger service provided by 27 coaches, but these did not appear on the road until the 1920s.

In some years after 1895 the road made a profit, but in 1932 after years of dwindling revenues, the bonds were defaulted, and trustees in bankruptcy were appointed. No dividends had been paid on the common stock since 1913, and although the coffee boom of the early 1950s increased the freight revenue, the trustees have been lucky to make operating expenses. All of this explains why the Salvador Ry, is the way it is. They cannot afford to modernize, and have thereby retained intact what might be called the "Virginia & Truckee" of the 3 footers.

Until 1951, IRCA would not accept freight cars from the Salvador Ry. for transport to Barrios on the Caribbean, because all the latter's cars had link and pin couplers, and a 6 inch difference in height of coupler centers from the rails further complicated the problem of car

interchange. To overcome this difficulty, a number of box cars were purchased second-hand from the Oahu Ry. in Hawaii in 1951, together with four consolidation type locomotives. This equipment complied with IRCA standards, and is used for loading freight going off the Salvador Ry. line. A unique adapter in the form of a heavy, bent steel bar with a hole in each end makes it possible for the Oahu cars to be operated in the same train with the old link and pin cars, on the Salvador Ry., but IRCA will not permit this on their lines.

The road's lease expires in 1974, at which time the government can take over the railroad. The bondholders would like to see the government take the road over now, for a price, but as of 1960 there has been no action on the matter. There is no money in the treasury for dieselization, and it is cheaper to repair the steam power, so the Salvador Ry. puffs on, in its own unique way.

FERROCARRIL SAN SALVADOR y SANTA TECLA:

Organized in 1891 to provide a rail connection to the city of Santa Tecla, 9 miles west of San Salvador, this 3 ft. gauge road was constructed between 1892 and 1894. Originally powered by three 0-6-0 tender engines built in Belgium, this line was never a profitable one. In 1897 they bought a 2-6-0 from the Pittsburgh Locomotive Works, which operated until 1923 when the road was electrified, and the steam engines were retired. One of the 0-6-0s had been sold to the Guatemala Ry. in 1909, and it has been preserved as a relic in a park in Guatemala City where it is slowly rusting away.

FERROCARRIL VERAPAZ:

This road came into being through the efforts of Allan Foster Willard of the U. S., and the coffee growers of the Alta-Verapaz district. Organized January 1896, and completed in 1897, this road extends from the river port of Panzos, on the Polochic River, to the town of Pancajche, 28 miles up river. Built in 3 ft. gauge, it brought freight down from the highlands of Verapaz to Panzos, where it was loaded on a river steamer which crossed the lake of Izabal, and continued down the river to Livingston, on the bay of Amatique. Puerto Barrios, the terminal of IRCA is 20 miles east of Livingston on the same bay, but has no physical connection with the Verapaz, which has remained an isolated and little known carrier for over sixty years.

In 1922, the German banking house of Schlubach, Sapper & Co. bought the railroad from Willard, and the line continues to serve the back country as far as the city of Coban, which is reached by trucks from the railhead.

THE LOCOMOTIVES OF GUATEMALA AND EL SALVADOR

INTERNATIONAL RYS. OF CENTRAL AMERICA AND PREDECESSORS:

GUATEMALA CENTRAL

1	Vacant					
2	2-6-0	Baldwin	# 4802	10/1879	37-12x18-41000	To Guatemala Ry. #60-*
3	4-4-0	Baldwin	# 3972	8/1876	42-12x16-44000	To Guatemala Ry. #61-**
4	4-4-0	Baldwin	# 4735	8/1879	42-12x16-44000	To Guatemala Ry. #62-***
5	2-8-0	Cooke	# 1517	12/1883	37-16x20-68000	To Guatemala Ry. #63
6	2-8-0	Cooke	# 1518	12/1883	37-16x20-68000	To Guatemala Ry. #64
7	2-8-0	Cooke	# 1634	1/1885	37-16x20-68000	To Guatemala Ry. #65
8	2-8-0	Cooke	# 1635	1/1885	37-16x20-68000	To Guatemala Ry. #66
9	4-6-0	Baldwin	#11216	9/1890	42-17x20-86000	To Guatemala Ry. #67
10	4-6-0	Baldwin	#11231	9/1890	42-17x20-86000	To Guatemala Ry. #68
11	4-6-0	Schen.	# 4180	/1893	42-18x20-86900	To Guatemala Ry. #69
12	4-6-0	Schen.	# 4181	/1893	42-18x20-86900	To Guatemala Ry. #70
13	See #18					
14	4-6-0	Baldwin	#14085	7/1894	42-18x20-88000	To Guatemala Ry. #71
15	4-6-0	Baldwin	#14412	7/1894	42-18x20-92500	To Guatemala Ry. #72
16	4-6-0	Baldwin	#14413	7/1894	42-18x20-92500	To Guatemala Ry. #73
17	4-6-0	Baldwin	#14414	7/1894	42-18x20-92500	To Guatemala Ry. #74
18	4-6-0	Baldwin	#14084	7/1894	42-18x20-88000	To Guatemala Ry. #75 Ex 13
19	4-6-0	Baldwin	#18798	3/1901	42-18x20-92500	To Guatemala Ry. #76
20	4-6-0	Baldwin	#18799	3/1901	42-18x20-92500	To Guatemala Ry. #77
21	4-6-0	Baldwin	#18800	3/1901	42-18x20-92500	To Guatemala Ry. #78
22	4-6-0	Baldwin	#18801	3/1901	42-18x20-92500	To Guatemala Ry. #79
23	2-6-0	Baldwin	#24471	7/1904	42-15x20-64000	To Guatemala Ry. #80
24	2-6-0	Baldwin	#24472	7/1904	42-15x20-64000	To Guatemala Ry. #81
25	2-6-0	Baldwin	#24473	7/1904	42-15x20-64000	To Guatemala Ry. #82
26	Shay	Lima	# 1739	9/1906	36-12x15-130000	To Guatemala Ry. #83
27	4-6-0	Baldwin	#35273	9/1910	42-18x20-96500	To Guatemala Ry. #84
28	4-6-0	Baldwin	#35274	9/1910	42-18x20-96500	To Guatemala Ry. #85

* Built as Guatemala Central #1, "J. Rufino Barrios"
** Built as Santa Cruz RR #3. Acquired 2/1885
*** Built as Guatemala Central #2, "San Jose De Guatemala"

GUATEMALA NORTHERN

1	2-8-0	Baldwin	# 7181	2/1884	36-16x20-76000	To Guatemala Ry. #1
2	0-4-4	Baldwin	# 7554	2/1885	42-11x16-40000	To Guatemala Ry. #2
3	4-6-0	Baldwin	#13966	3/1894	44-15x18-60000	To Guatemala Ry. #3
4	4-6-0	Baldwin	#14161	11/1894	44-15x18-60000	To Guatemala Ry. #4
5	4-6-0	Baldwin	#14166	11/1894	44-10/17x18 V.C.	To Guatemala Ry. #5*
6	4-6-0	Baldwin	#14669	1/1896	44-15x18-60000	To Guatemala Ry. #6
7	2-8-0	Baldwin	#14911	6/1896	40-16x20-87000	To Guatemala Ry. #7
8	2-4-2	Baldwin	#14048	7/1894	39-11x16	To Guatemala Ry. #8
11	2-6-2	Baldwin	#14668	1/1896	39-14x18-66000	To Guatemala Ry. #11

* Vauclain compound.

GUATEMALA RAILWAY CO. Incorp. 6/8/1904. IRCA after 1913

1	2-8-0	Baldwin	# 7181	2/1884	To IRCA #59—1928	Ex GN #1
2	0-4-0	Baldwin	# 7554	2/1885	To IRCA #45—1928	Ex GN #2
3	4-6-0	Baldwin	#13966	3/1894	To IRCA #54—1928	Ex GN #3
4	4-6-0	Baldwin	#14161	11/1894	"Fell" in Motagua River in 1908. Lost.	
4	0-6-0	Societe Liege	# 978	/1894	Ex San Salvador y Santa Tecla. Retired	
5	4-6-0	Baldwin	#14166	11/1894	Retired prior 1913. Ex. GN #5	
6	4-6-0	Baldwin	#14669	1/1896	To IRCA #55—1928	Ex GN #6
7	2-8-0	Baldwin	#14911	6/1896	To IRCA #60—1928	Ex GN #7
8	2-4-2	Baldwin	#14048	7/1894	To IRCA #32—1928	Ex GN #8
9	2-6-0	Baldwin	#24502	7/1904	To IRCA #47—1928	
10	2-6-2	Baldwin	#24811	12/1904	Retired prior 1928	
11	2-6-2	Baldwin	#14668	1/1896	To IRCA #46—1928	9x GN #11
12	2-6-0	Baldwin	#25985	7/1905	To IRCA #48—1928	
13	2-6-0	Baldwin	#26076	7/1905	To IRCA #49—1928	
14	2-6-0	Baldwin	#26283	8/1905	To IRCA #50—1928	
15	2-6-0	Baldwin	#26495	8/1905	To IRCA #51—1928	
16	2-6-0	Baldwin	#26927	11/1905	To IRCA #52—1928	
17	2-6-0	Baldwin	#27020	11/1905	To IRCA #53—1928	
18	Shay	Lima	# 1996	11/1907	Not Renumb.—Condemned 1931	
19	Shay	Lima	# 1997	11/1907	To IRCA #74—1928	
20	2-8-0	Baldwin	#34041	11/1909	To IRCA #63—1928	
21	2-8-0	Baldwin	#34042	11/1909	To IRCA #62—1928	
22	2-8-0	Baldwin	#34078	11/1909	To IRCA #61—1928	
23	2-8-0	Baldwin	#35252	9/1910	To IRCA #64—1928	
24	2-8-0	Baldwin	#35253	9/1910	To IRCA #65—1928	
25	2-8-0	Baldwin	#37528	3/1912	To IRCA #36—1928	
26	2-8-0	Baldwin	#37529	3/1912	To IRCA #35—1928	
27	4-6-0	Baldwin	#38792	11/1912	To IRCA #56—1928	
28	4-6-0	Baldwin	#38793	11/1912	To IRCA #57—1928	
29	4-6-0	Baldwin	#38794	11/1912	To IRCA #58—1928	
30	2-6-0	Rogers	# 5130	/1895	To IRCA #33—1928	See Note A
31	2-8-0	Baldwin	#15337	5/1897	To IRCA #34—1928	See Note B
32	2-8-0	Baldwin	#39977	6/1913	To IRCA #37—1928	
33	2-8-0	Baldwin	#39978	6/1913	To IRCA #38—1928	
34	2-8-0	Baldwin	#40116	7/1913	To IRCA #66—1928	
35	2-8-0	Baldwin	#40117	7/1913	To IRCA #67—1928	
36	2-8-0	Baldwin	#40118	7/1913	To IRCA #68—1928	
37	2-8-0	Baldwin	#41590	7/1914	To IRCA #69—1928	

38-44 Vacant

Note A: Engine #30 was Central De El Salvador #1, "La Union."
Note B: Engine #31 was Central De El Salvador #2.

45	2-8-0	Baldwin	#41591	8/1914	To IRCA #70—1928
46	2-8-0	Baldwin	#41592	8/1914	To IRCA #71—1928
47	2-8-0	Baldwin	#41593	8/1914	To IRCA #72—1928
48	2-8-0	Baldwin	#41594	8/1914	To IRCA #73—1928
49	2-8-0	Baldwin	#52664	12/1919	To IRCA #39—1928
50	2-8-0	Baldwin	#53777	9/1920	To IRCA #40—1928
51	2-8-0	Baldwin	#53778	9/1920	To IRCA #41—1928
52	2-8-0	Baldwin	#55084	9/1921	To IRCA #42—1928
53	2-8-0	Baldwin	#55085	9/1921	To IRCA #43—1928
54	2-8-0	Baldwin	#55086	9/1921	To IRCA #44—1928

55-59 Vacant

60	2-6-0	Ex GC	#2	Baldwin	# 4802	6/1879	Retired 1914
61	4-4-0	Ex GC	#3	Baldwin	# 3972	8/1876	To IRCA # 84—1928
62	4-4-0	Ex GC	#4	Baldwin	# 4735	8/1879	To IRCA # 82—1928
63	2-8-0	Ex GC	#5	Cooke	# 1517	12/1883	To IRCA # 76—1928
64	2-8-0	Ex GC	#6	Cooke	# 1518	12/1883	Condemned 1926
65	2-8-0	Ex GC	#7	Cooke	# 1634	1/1885	Condemned 1926
66	2-8-0	Ex GC	#8	Cooke	# 1635	1/1885	To IRCA # 77—1928
67	4-6-0	Ex GC	#9	Baldwin	#11216	9/1890	To IRCA # 86—1928
68	4-6-0	Ex GC	#10	Baldwin	#11231	9/1890	To IRCA # 87—1928
69	4-6-0	Ex GC	#11	Schen.	# 4180	11/1892	To IRCA # 88—1928
70	4-6-0	Ex GC	#12	Schen.	# 4181	11/1892	To IRCA # 89—1928
71	4-6-0	Ex GC	#14	Baldwin	#14085	7/1894	To IRCA # 90—1928
72	4-6-0	Ex GC	#15	Baldwin	#14412	9/1894	To IRCA # 91—1928
73	4-6-0	Ex GC	#16	Baldwin	#14413	9/1894	To IRCA # 92—1928
74	4-6-0	Ex GC	#17	Baldwin	#14414	9/1894	To IRCA # 93—1928
75	4-6-0	Ex GC	#18-13	Baldwin	#14084	7/1894	To IRCA # 94—1928
76	4-6-0	Ex GC	#19	Baldwin	#18798	3/1901	To IRCA # 95—1928
77	4-6-0	Ex GC	#20	Baldwin	#18799	3/1901	To IRCA # 96—1928
78	4-6-0	Ex GC	#21	Baldwin	#18800	3/1901	To IRCA # 97—1928
79	4-6-0	Ex GC	#22	Baldwin	#18801	3/1901	To IRCA # 98—1928
80	2-6-0	Ex GC	#23	Baldwin	#24471	7/1904	To IRCA # 79—1928
81	2-6-0	Ex GC	#24	Baldwin	#24472	7/1904	To IRCA # 80—1928
82	2-6-0	Ex GC	#25	Baldwin	#24473	7/1904	To IRCA # 81—1928
83	Shay	Ex GC	#26	Lima	# 1739	9/1906	To IRCA # 75—1928
84	4-6-0	Ex GC	#27	Baldwin	#35273	9/1910	To IRCA # 99—1928
85	4-6-0	Ex GC	#28	Baldwin	#35274	9/1910	To IRCA #100—1928
86	4-4-0	Ex GW	#51-1	Baldwin	# 3840	/1876	To IRCA # 85—1928
87	2-6-0	Ex GW	#52-2	Baldwin	# 6409	10/1882	Retired prior 1928
88	2-6-0	Ex GW	#53-3	Baldwin	# 7204	3/1884	Retired prior 1928
89	2-6-0	Ex GW	#54-4	Baldwin	#12146	8/1891	To IRCA # 83—1928
90	4-6-0	Ex GW	#55-5	Baldwin	#15537	10/1897	Retired prior 1928
91	2-6-0	Ex GW	#56-6	Baldwin	#24356	6/1904	Retired prior 1928
92	4-4-0	Ex Ocos 1		Rogers	# 5134	/1896	Retired prior 1928
93	4-4-0	Ex Ocos 2		Rogers	# 5185	/1897	Retired prior 1928
94	0-4-0T	Ex Ocos 3		Baldwin	# 9172	4/1888	Retired prior 1925
94	2-8-0			Baldwin	#58441	5/1925	To IRCA #101—1928
95	2-8-0			Baldwin	#58224	3/1925	To IRCA #102—1928
96	2-8-0			Baldwin	#58225	3/1925	To IRCA #103—1928
97	2-8-0			Baldwin	#58235	3/1925	To IRCA #104—1928
98	2-8-0			Baldwin	#58439	5/1925	To IRCA #105—1928
99	2-8-0			Baldwin	#58440	5/1925	To IRCA #106—1928
100	2-8-0			Baldwin	#58162	1/1925	To IRCA #114—1928
101	2-8-0			Baldwin	#58163	1/1925	To IRCA #115—1928
102	2-8-0			Baldwin	#58164	1/1925	To IRCA #116—1928
103	2-8-0			Baldwin	#58226	2/1925	To IRCA #117—1928
104	2-8-0			Baldwin	#58227	2/1925	To IRCA #118—1928
105	2-8-0			Baldwin	#58231	2/1925	To IRCA #119—1928
106	2-8-0			Baldwin	#58232	2/1925	To IRCA #120—1928
107	2-8-0			Baldwin	#58233	2/1925	To IRCA #121—1928
108	2-8-0			Baldwin	#58234	2/1925	To IRCA #122—1928
109	2-8-0			Baldwin	#59130	4/1926	To IRCA #123—1928
110	2-8-0			Baldwin	#59129	4/1926	To IRCA #124—1928
111	2-8-0			Baldwin	#59131	4/1926	To IRCA #125—1928
112	2-8-0			Baldwin	#59160	4/1926	To IRCA #107—1928
113	2-8-0			Baldwin	#59161	4/1926	To IRCA #108—1928
114	2-8-0			Baldwin	#59162	4/1926	To IRCA #109—1928
115	2-8-0			Baldwin	#59163	4/1926	To IRCA #110—1928
116	2-8-0			Baldwin	#59164	4/1926	To IRCA #111—1928
117	2-8-0			Baldwin	#59165	4/1926	To IRCA #112—1928
118	2-8-0			Baldwin	#59166	4/1926	To IRCA #113—1928

IRCA—Locomotives acquired after the 1928 renumbering.

126	2-8-2	Baldwin	#60586	8/1928
127	2-8-2	Baldwin	#60587	8/1928
128	2-8-2	Baldwin	#60588	8/1928
129	2-8-2	Baldwin	#60589	8/1928
150	2-8-2	Baldwin	#60556	7/1928
151	2-8-2	Baldwin	#60557	7/1928
152	2-8-2	Baldwin	#60588	8/1928
153	2-8-2	Baldwin	#60589	8/1928
154	2-8-2	Porter	# 7168	6/1930
155	2-8-2	Porter	# 7169	6/1930
156	2-8-2	Porter	# 7170	6/1930
157	2-8-2	Baldwin	#61991	4/1936
158	2-8-2	Baldwin	#61992	4/1936
159	2-8-2	Baldwin	#61993	4/1936
160	2-8-2	Baldwin	#61994	4/1936
161	2-8-2	Baldwin	#61995	4/1936
162	2-8-2	Krupp	# 1682	/1937
163	2-8-2	Krupp	# 1683	/1937
164	2-8-2	Krupp	# 1684	/1937
165	2-8-2	Krupp	# 1685	/1937
166	2-8-2	Krupp	# 1686	/1937
167	2-8-2	Krupp	# 1872	/1938
168	2-8-2	Krupp	# 1873	/1938
169	2-8-2	Krupp	# 1874	/1938
170	2-8-2	Krupp	# 1984	/1939
171	2-8-2	Krupp	# 1985	/1939
172	2-8-2	Krupp	# 1986	/1939
173	2-8-2	Krupp	# 1987	/1939
174	2-8-2	Krupp	# 1988	/1939
175	2-8-2	Baldwin	#72654	10/1946
176	2-8-2	Baldwin	#72655	10/1946
177	2-8-2	Baldwin	#72656	10/1946
178	2-8-2	Baldwin	#72657	10/1946
179	2-8-2	Baldwin	#72658	10/1946
180	2-8-2	Baldwin	#72659	10/1946
181	2-8-2	Baldwin	#73096	4/1947
182	2-8-2	Baldwin	#73097	4/1947
183	2-8-2	Baldwin	#73098	4/1947
184	2-8-2	Baldwin	#73099	4/1947
185	2-8-2	Baldwin	#73101	4/1947
186	2-8-2	Baldwin	#73100	4/1947
187	2-8-2	Baldwin	#73668	6/1948
188	2-8-2	Baldwin	#73669	6/1948
189	2-8-2	Baldwin	#73670	6/1948
190	2-8-2	Baldwin	#73671	6/1948
191	2-8-2	Baldwin	#73672	6/1948
192	2-8-2	Baldwin	#73673	6/1948
193	2-8-2	Baldwin	#73674	6/1948
194	2-8-2	Baldwin	#73675	6/1948
195	2-8-2	Baldwin	#74125	11/1948
196	2-8-2	Baldwin	#74126	11/1948
197	2-8-2	Baldwin	#74127	11/1948
198	2-8-2	Baldwin	#74128	11/1948
199	2-8-2	Baldwin	#74129	11/1948
200	2-8-2	Baldwin	#74130	11/1948
201	2-8-2	Baldwin	#74131	11/1948
202	2-8-2	Baldwin	#74132	11/1948
203	2-8-2	Baldwin	#74133	11/1948
204	2-8-2	Baldwin	#74134	11/1948
205	2-8-2	Baldwin	#74135	11/1948
206	2-8-2	Baldwin	#74136	11/1948

Note: These four engines left the factory with road numbers 140-143, but were renumbered before being placed in service.

250 2-6-6-2 Ex Sumpter Valley 250—Uintah 50 Bald. #59261 5/1926 Acq. 1947
251 2-6-6-2 Ex Sumpter Valley 251—Uintah 51 Bald. #60470 4/1928 Acq. 1947

Diesel-Electric Locomotives:

600-601	General Electric	#30148-149	2/1950,	120	tons
502-605	General Electric	#30150-153	3/1950,	120	tons
606-611	General Electric	#32641-646	5/1956,	120	tons
700-706	General Electric	#32647-653	6/1956,	50	tons

GUATEMALA WESTERN

1	4-4-0	Baldwin # 3840	3/1876	42—12x16—44000	Renumb. 51—To Gua. Ry.	#86*
2	2-6-0	Baldwin # 6409	10/1882	39—14x18—50350	Renumb. 52—To Gua. Ry.	#48**
3	2-6-0	Baldwin # 7204	3/1884	39—14x18—50350	Renumb. 53—To Gua. Ry.	#88**
4	2-6-0	Baldwin #12146	8/1891	40—18x20—78000	Renumb. 54—To Gua. Ry.	#89
5	4-6-0	Baldwin #15537	10/1897	46—16x20—75000	Renumb. 55—To Gua. Ry.	#90
6	2-6-0	Baldwin #24356	6/1904	38—15x18—73000	Renumb. 56—To Gua. Ry.	#91

* No. 1 was built as North Pacific Coast #10. Acquired 1895.
** Nos. 2 and 3 were built as Champerico & Northern Transportation Co. Nos. 2 and 3.

No. 4 named "SAN FELIPE." No. 5 named "MAZATENANGO." No. 6 named "MULUA."

FERROCARRIL OCOS:

1	4-4-0	Rogers	#5134 /1896	Named "OCOS"	To Guatemala Ry.	#92
2	4-4-0	Rogers	#5185 /1897	Named "COATEPEQUE"	To Guatemala Ry.	#93
3	0-4-0T	Baldwin	#9172 4/1888	Named "TUMBADOR"	To Guatemala Ry.	#94**

** Built for the Pacific Bridge Co.
Dimensions of Nos. 1 and 2 were—34- 12 5/16 x 18—44000.
Dimensions of No. 3 was 22 3/16 drivers, 7 5/32 x 12 cyls.

FERROCARRIL CENTRAL DE EL SALVADOR:

1	2-6-0	Rogers	# 5130 /1895	Named "La Union."	40—14x18	To Gua. Ry.	#30
2	2-8-0	Baldwin	#15337 5/1897		38—15x20	To Gua. Ry.	#31

FERROCARRIL SAN SALVADOR y SANTA TECLA:

-	0-6-0	Soc. Liege	# 977 5/1894		
-	0-6-0	Soc. Liege	# 978 5/1894	To Guatemala Ry. 2nd #4	
-	0-6-0	Soc. Liege	# 979 5/1894		
3	2-6-0	Pittsburg	#1694 2/1897	41—14x22 and 22x22 Cross compound	

FERROCARRIL VERAPAZ:

1	4-4-0	Baldwin	#14592	12-1895	43—12x18	Named "Verapaz." Fell in Polochic River in 1929. Not recovered.
2	4-4-0	Baldwin	#15109	12-1896	43—12x18	Named "Coban." New Baldwin boiler, XO #713—1931.
3	2-6-0	Baldwin	#61105	11/1929		

UNITED FRUIT CO., GUATEMALAN LINES:

All are 2-6-0, 3 ft. gauge

1	Porter	#4513	12/1909	37½—10x14—33000—28000—160—5775	Ex UF. Co. #55
2	Porter	#4514	12/1909	37½—10x14—33000—28000—160—5775	Ex UF Co. #56
3	Porter	#4515	12/1909	37½—10x14—33000—28000—160—5775	Ex UF Co. #57
4	Porter	#4516	12/1909	37½—10x14—33000—28000—160—5775	Ex UF Co. #58
5	Porter	#5517	3/1914	40½—12x16—45500—39000—170—9250	Ex UF Co. #38
6	Porter	#5518	3/1914	40½—12x16—45500—39000—170—9250	Ex UF Co. #39
7	Porter	#5519	3/1914	40½—12x16—45500—39000—170—9250	Ex UF Co. #40
8	Porter	#6581	10/1920	40½—12x16—51000—44000—170—10420	Ex UF Co. #64*
9	Porter	#6582	10/1920	40½—12x16—51000—44000—170—10420	Ex UF Co. #65*
10	Porter	#5520	3/1914	40½—12x18—51000—44000—170—10420	Ex UF Co. #41
11	Porter	#5521	3/1914	40½—12x18—51000—44000—170—10420	Ex UF Co. #42
12	Porter	#5522	3/1914	40½—12x18—51000—44000—170—10420	Ex UF Co. #43
13	Porter	#5523	3/1914	40½—12x18—51000—44000—170—10420	Ex UF Co. #44
14	Porter	#6790	3/1923	40½—12x18—51000—44000—170—10420	Ex UF Co. #99
15	Porter	#6977	5/1925	40½—12x18—51000—44000—170—10420	Ex UF Co. #98

* Nos. 8 and 9 were first used on United Fruit's Boca Del Toro line in Panama, and were brought to Guatemala in 1928. Nos. 1-4 incl., though built in 1909, did not go in service in Guatemala until 1911-1913.

MECHANICAL DIMENSIONS OF THE *IRCA* ENGINES, CLASSED TOGETHER, IN THE 1928 SERIES.

32	39—11x16	
33	40—14x18	
34	38—15x20	
35–44	38—16x20—93400—85750—180—20600	
45	42—11x16—40000—30000—110—4700	
46	39—14x20—66000—54000—130—11600	
47	42—14x18—64000—54000—130—9700	
48–53	40—16x20—74000—64000—150—13600	
54–55	40—15x18—60000—53000—145—12000	
56–58	40—18x20—96500—78700—180—22000	
59	36—16x20—76000—70000—140—18000	
60	40—16x20—87000—80000—170—18500	
61–73	38—16x20—91000—82000—170—20500	
74	36—13x15—160000—190—32500	
75	36—12x15—130000—180—29800	
76–77	37—16x20—68000—60000—135—17600	
78	46—16x20—75000—64000—	
79–81	42—15x20—64000—64000—135—12700	
82	42—12x16—44000—28000	
83	40—17x20—78000—70000—135—17500	
84	42—12x18—44000—28000—140—7346	
85	42—12x16—44000—28000—140—7000	
86–87	42—17x20—86000—70000—170—20400	
88–89	42—17x20—86900—73600—160—20100	
90	42—17x20—88000—70000—175—20400	
91–93	42—17x20—92500—78700—175—20400	
94	42—17x20—88000—70000—175—20400	
95–98	42—17x20—92500—78700—175—20400	
99–100	42—17x20—96500—78700—175—20400	
101–125	40—17x20—102800—95100—180—20800	exc. 109-11 have 16½x20 cyls.
126–129	40—16x20—105490—82190—185—20100	
150–153	40—18x22—139200—106900—175—26500	
154–156	40—18x22—147000—110000—175—26500	
157–161	40—18x22—146300—110000—175—26500	
162–174	40—18x22—141300—108000—180—27265	
175–206	40—18x22—146300—110000—180—27265	
250–251	42—15x22—236300—194500—240—42100	

FERROCARRIL DE EL SALVADOR (SALVADOR RY. CO. LTD.);

1	4-4-0	Prescott, Scott & Co. #28—1882		36—12x16—40500	Ex Acajutla & Sonsonate #1, "F. Camacho." Retired 120. Note A	
2	2-8-0	Baldwin	# 6963	9/1883	37—15x20—60000	Ex Santa Ana Ry. # 1
3	2-8-0	Baldwin	#10035	6/1889	38—15x20—67770	Ex Santa Ana Ry. # 2
4	2-8-0	Baldwin	#11902	5/1891	38—15x20—67770	Ex Santa Ana Ry. # 3
5	2-8-0	Cooke	# 2251	2/1893	38—16x20—70000	Ex Santa Ana Ry. # 4
6	4-6-0	Baldwin	#14453	9/1895	42—17x20—82900	Ex Santa Ana Ry. # 5
7	4-6-0	Baldwin	#14454	9/1895	42—17x20—82900	Ex Santa Ana Ry. # 6
8	4-6-0	Baldwin	#14824	5/1896	42—17x20—82900	Ex Acajutla-SS # 8
9	4-6-0	Baldwin	#15071	10/1896	42—16x20—77720	Ex Acajutla-SS # 9
10	4-6-0	Baldwin	#15072	10/1896	42—16x20—77720	Ex Acajutla-SS #10
11	4-6-0	Baldwin	#15323	5/1897	42—16x20—77720	Ex Acajutla-SS #11
12	4-6-0	Baldwin	#35472	10/1910	42—17x20—86000	
13	4-6-0	Baldwin	#35473	10/1910	42—17x20—86000	
14	2-8-0	Baldwin	#58469	6/1925	42—17x20—108000	
32	2-8-0	Alco-Rogers #53446 4/1913				Ex Oahu Ry. 32
34	2-8-0	Alco-Manchester #51164 5/1912				Ex Oahu Ry. 34
35	2-8-0	Alco-Rogers #55827 4/1916				Ex Oahu Ry. 35
36	2-8-0	Alco-Rogers #53447 4/1913				Ex Oahu Ry. 36

Note A The chassis of # 1 was rebuilt as a stationary engine at the Sonsonate Shops. The boiler was used as an air storage tank, and both were in use as of 1/1959.

ACAJUTLA & SONSONATE:

1 4-4-0 Prescott, Scott & Co., S. F. #28—1882 36—12x16—40500
To Salvador Ry. Co. #1

2 4-4-0 Prescott, Scott & Co., S. F. #29—1882 36—12x16—40500
Was not in use at the time of the 1897 consolidation.

The locomotive list of IRCA has been divided into three sections. The predecessor lines of the Guatemala Ry. are in the first part, the Guatemala Ry. after its formation in 1904 is second, and the engines acquired by IRCA after 1913 is third.

While the large majority of all locomotives brought to Guatemala and El Salvador were built by Baldwin, there were a few from Cooke, Rogers and Schenectady. The first two engines on the Guatemala Central were a 2-6-0 and a 4-4-0 from Baldwin in 1879, followed by four Cooke consolidations in 1883 and 1885 which must have looked as if they had been stolen from the Denver, South Park & Pacific. An 1876 Baldwin 4-4-0 built as Santa Cruz RR #3 was brought down from California in 1885, as the Santa Cruz RR and the Guatemala Central were both controlled by C. P. Huntington, and it was quite logical for the engine to be shipped to one of his Central American projects. That it would outlast all of the later and larger engines purchased during his regime probably never occurred to him, but as IRCA #84, it operated on the Ocos branch through the 1950s, and is now stored at Ayutla.

Most of the Guatemala Central's engines were Baldwin 4-6-0s, except for three 2-6-0s bought in 1904, and a Shay from Lima in 1906. Great things were expected of the Shay, and an additional Lima was purchased in 1910, but their slow maximum speed, and limited range confined them to helper service.

The Guatemala Northern had 9 engines during its operation under that name, but new locomotives purchased in 1904-07 under the Guatemala Ry.'s direction were assigned to the same series, making a total of 19 engines of the line east of Guatemala City by 1908.

The Guatemala Western had six engines, all Baldwins, one purchased second-hand from the North Pacific Coast RR in California in 1895. When the Guatemala Ry. was first formed, these six engines were renumbered 51-56 inclusive, so as not to conflict with the Guatemala Northern engines which often made use of the same roundhouse. In later years, they were again renumbered as 86-91 in the Guatemala Ry. series.

The three Ocos engines were renumbered Guatemala Ry. 92-94 incl. and disappeared off the active roster prior to 1928.

In 1912, upon consolidation of all lines in Guatemala and El Salvador under the IRCA banner, except for the independent lines previously listed, an order of consolidation type locomotives was placed with Baldwin, to be delivered in two groups; four to the El Salvador line then building out of San Miguel, and eight to Guatemala. In 1919-21, after World War I, six more of the same class were delivered at La Union for the El Salvador line, and until 1928, this entire operation was handled by twelve engines, all 2-8-0s except #33 which was the Rogers mogul taken over from the Central de El Salvador. Three 4-6-0s were ordered from Baldwin in 1912, of the same design as the earlier Guatemala Central ten-wheelers, and were assigned to the Guatemala lines.

In 1925 and 1926, as the connecting link between the Salvador and Guatemalan lines were being pushed to completion, 25 additional consolidations, somewhat heavier than the 1912 series, were ordered from Baldwin, and these were divided between the two countries. In 1928 and 1929, at the time the new construction was finished, eight 2-8-2s were ordered; four of low axle weight for El Salvador, and four heavier engines for Guatemala. In 1930, Porter shipped three 2-8-2s to IRCA and one to United Fruit for their west coast Costa Rican line, and these were the only Porters to run on the IRCA system. In 1936, the first of the heavy Baldwin 2-8-2s were ordered, and in 1937 and 1938, an order for 13 2-8-2s of identical dimensions was placed with Krupp in Germany, payment to be made in coffee on a barter basis. The first five Krupps were delivered in 1937; three more arrived in 1938, but the five which would have been delivered in October 1939 were on the high seas when World War II began, and the ship bearing these engines fled for safety to a port in the republic of Colombia. It was not until 1941 that these engines reached Guatemala. The Krupps had copper fireboxes, and could be distinguished from the other "mikes" of identical dimensions by the shape of the bell (the German never quite got the idea of the bell frame), the builders plate on the cylinder jacket instead of the smokebox, and a few other minor details.

In 1946-1948, 32 additional 2-8-2s were ordered from Baldwin, and these were the last new steam locomotives imported by IRCA. In 1947, Sumpter Valley 250 and 251, simple articulated 2-6-6-2 tender engines, were purchased second-hand for use as helpers on the Palin grade east

of Escuintla, and together with the two 4-4-0s imported in 1885 and 1895, were the only second-hand engines to run in Guatemala. The 250 and 251 are still in service as of 1960, but are little used due to the fact that they are wearing out.

From 1948, the new Baldwin "mikes" were the backbone of the main line from Ayutla to Barrios. A few of them went to El Salvador in the early 1950s in trade for the 150-153, but passengers and heavy freights were powered by these handsome engines. The Guatemala Central ten-wheelers of the 1894-1904 era became the yard switchers at Guatemala City, Ayutla and Mazatenango, and the early Baldwin moguls operated branch line mixed trains. Except for Nos. 76 and 84, all the pre-1894 engines had been scrapped by 1928, at which time a complete renumbering of all engines was made, and which is still in use at this writing.

In 1950, five General Electric diesel-electric locomotives were purchased, but due to labor union refusal to operate them on the theory that they eliminated jobs, they remained stored until after the 1954 revolution. Since then, these five engines have been augmented by seven additional GE's, plus a group of 400 HP diesel-electric switchers from the same supplier. Complete replacement of steam power, however, seems to be some time away, as the company is in no condition financially to ruthlessly replace all steam power in the manner of the past ten years in the United States. The matter of replacement parts has been the biggest problem, but under the able direction of Matthew Turtin, Supt. of Motive Power, the Guatemala City shops have been able to manufacture anything required in the way of steam locomotive replacement supplies.

The passenger rolling stock of IRCA was all built in the U. S. and until the end of World War II, was of wooden construction. In the early 1950s, a program of modernization of all passenger equipment was begun, and steel coach bodies were assembled in the Guatemala City and San Salvador shops, from pre-fabricated parts shipped from U. S. suppliers. The trucks of the older wooden cars were rebuilt and re-used where they were in good condition. The San Salvador shops built a number of vestibuled steel coaches, which are used on the daily coach trains between San Salvador and San Miguel. Combination first- and second-class steel coaches were also built, for use on the San Salvador-Zacapa runs.

Before the airplanes robbed IRCA of its tourist travel from the seaports, a number of wooden parlor-observation cars were operated, but they have all been withdrawn, to be used as outfit cars and in some cases converted into coaches. A few of the old wooden cars were still in use as late as 1959, but their days are numbered. Perhaps the most wondrous piece of passenger rolling stock in Guatemala is the 4th class coach, which is a banana car converted into a passenger car by placing benches lengthwise, to accommodate from 50 to 75 persons. These are used only in emergencies, but on certain holidays, I have seen train after train of these cars, loaded to the doors with back-country natives coming into Guatemala City for the day, all reminiscent of the 40 and 8 cars of World War I.

SALVADOR RY. CO. LTD.:

The first two locomotives in El Salvador were the 4-4-0s ordered from Prescott, Scott & Co. in San Francisco in late 1881, for the Acajutla & Sonsonate R. R. These ornate engines were the road's only motive power until 1896, when additional engines from Baldwin were delivered. The first Santa Ana Ry. locomotive was a Baldwin 2-8-0 built in 1883, and which bore a startling similarity to certain Denver & Rio Grande classes of the same era. In 1889 and 1891, additional 2-8-0s were purchased from Baldwin, and in 1893, a Cooke 2-8-0 was delivered. Two 4-6-0s for passenger service were ordered from Baldwin in 1895, and these completed the roster of the Santa Ana Ry. In 1896, Acajutla & Sonsonate #1 was taken over by the newly formed Acajutla-San Salvador Ry., and the Santa Ana engines were each renumbered one digit higher, making a total of 7 engines owned by the new company. Acajutla & Sonsonate #2 vanished from the scene at the time of the consolidation, and no records of its disposal, either by sale or scrapping can be found today.

The four Baldwin ten-wheelers received in 1896 and 1897 made a total of 11 engines, and these served the road until 1910 when Baldwin shipped two more 4-6-0s. In 1925, Baldwin built the last new engine for the road, No. 14, a relatively large consolidation. In 1951, four of the Oahu Ry.'s Alco-built consolidations were purchased in Honolulu and these retained their Oahu road numbers on the Salvador Ry. With these locomotives came a number of Oahu Ry. freight cars, and represented the last additional equipment to be acquired. In 1956, I wrote a description of a visit to Sonsonate and the shop there, and am repeating it here because of the unusual nature of some of the things described.

"I drove out to Sonsonate, a city of 25,000, over the narrow but well paved Pan-American highway, from San Salvador, a distance of 55 miles. Having already made a round trip to Sonsonate by train the year before, I chose to drive out by taxi in order to have more time at Sonsonate. I had the driver set me down at the railroad station, where he was paid for a round trip and sent on his way back to San Salvador, no doubt muttering to himself about the crazy Americano who preferred to ride on a train when he had already paid for a round trip in a comfortable 1939 Buick. Directly across the tracks from the station were the roundhouse and shop buildings, and the office of my old friend Pablo Guzman, the "Maestro Mecanico" of the Salvador Ry. Sr. Guzman made me feel at home, and in excellent English welcomed my wife, who had heard so much about the Salvador Ry. that she wanted to see it for herself.

Leaving our box lunches at his office, we circled the turntable, which is a rail photographer's dream because it has no railings, and were conducted to the roundhouse, which consists of a series of rectangular buildings joined together to form seven stalls, several of which were occupied by engines in various stages of general repair. In back of the roundhouse was the boiler room and the machine shop, the principal point of interest for me. Now railroad shops may not attract the majority of railfans, but this one should, for it is 90 percent powered by

steam. The lathes, drill presses, shapers, grinders and most of the other machinery are belt driven from overhead shafting, which in turn is driven by a two-cylinder stationary engine. Except for the shop at Ridgway, Colo. on the late Rio Grande Southern, I have not seen a locomotive shop equipped like this one in the past forty years. The engine is the chassis of 4-4-0 No. 1, the first locomotive in El Salvador, and there it sits, mounted on a concrete base, with the flywheel placed in the center of the front driving axle, and except for the elimination of the rear pair of driving wheels and the side roads, it is complete even to the fancy brass cylinderhead covers, the stars and the acorn nuts, all of polished brass. Steam for the engine comes from a stationary boiler designed for that purpose, but the boiler of No. 1 is still doing duty as the compressed air storage tank in the roundhouse. As we stood there and admired the gold-striped red painted driving wheels and the great flywheel spinning around at about 200 RPM, I could hear the rattle and roar of the shop of which this engine is the heart, and the sound of the twin exhaust pipes chugging away on the roof above us. I regretted to note an electric motor belted to some of the shafting in the shop, but it was not operating at the time, and seemed to be a little used auxiliary.

Sr. Guzman took us out in back of the shop to see No. 2, the Baldwin 1883 consolidation which was the first Santa Ana Ry. engine, and the smallest on the active roster. The 2-spot was out of service for a general overhaul, and had stood there so long that tropical plants were growing from the dirt which had settled on the running boards, while a small shoot from a nearby tree had grown through a hole in the smokebox and was growing up almost as high as the stack. But since then, No. 2 made it through the shop and as of 1960 is in regular service. Since Baldwin can no longer supply such things as cylinder castings, wheel centers and frames, these are obtained from a British supplier.

In the car shops nearby, we were shown several of the passenger coaches being repainted and repaired, and one car just turned out stood gleaming in the sun, looking very fancy in its bright vermilion paint and gold lettering. The name of the builder was obscured by many coats of paint, but on the pedestals, the word "Lancashire" identified their British origin. Later it was determined that all the British built coaches came from the Metropolitan Ry. Carriage and Wagon Co. Ltd., Lancaster Works, Lancashire. These cars quickly turn a wine color under the tropical sun, but the newly painted coach was so bright that it over-exposed my kodachromes.

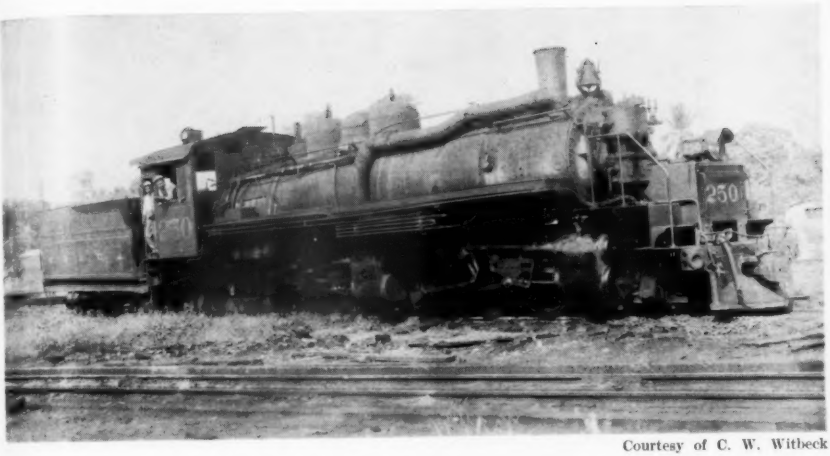
Returning to the roundhouse, we watched the turning of 4-6-0 No. 12, an outside-framed Baldwin which had just come in from Acajutla with a string of flats loaded with new Hillman-Minx cars, no doubt just unloaded from a British ship. The turntable is strictly "Armstrong," so well balanced that the hostler can center the engine, get out and turn the table himself. As there are no bars at either end, the hostler jumps down into the pit, digs in his heels and pulls the table towards him, although shopmen passing by will usually help if the going is tough.

Siesta is from noon until 2 P. M., and the shopmen went home for lunch, leaving the shop silent and deserted. But the two yard engines, Nos. 3 and 4 came in and were turned around, and so there were plenty of opportunities for photos. Since I had no photo of "El Grande Maquine," the big engine, No. 14, Sr. Guzman had the 54 ton Baldwin charged with compressed air, since the boiler was empty, and No. 14 rolled quietly outside for a picture, and just as silently backing into the stall when we were finished. Our train was waiting in the partly covered station by then, and regretfully we said goodby to Sr. Guzman, and he found us seats in the "Primera" or First-Class coach at the rear of the string of six coaches. First class cars have rattan-covered benches along each side, with a plain wooden bench down the center. This serves as a baggage rack unless the car becomes too crowded, in which case the surplus passengers sit back to back on the bench. But our car was only half-full when we left Sonsonate, and we had plenty of room to set our box lunches on the bench in front of us. This made us the center of attraction, but the passengers were a friendly lot, curious to see tourists, who had become a rarity since the Pan-American highway had been completed, so we got along fine.

Just before we pulled out of Sonsonate, a yard engine came up with the string of flats and the Hillman-Minx cars. Some dealer in San Salvador must have wanted those cars badly, for those flats tagged along behind us all the way to the big city, and our ten-wheeler, No. 7 averaged 30 mph with the 14 car train as we rolled along quite comfortably over the 50 lb. rail. Considering the lack of rock ballast, and the irregularly shaped ties, the coaches rode very well, but the little Hillman-Minxes bobbed up and down like horses on a merry-go-round.

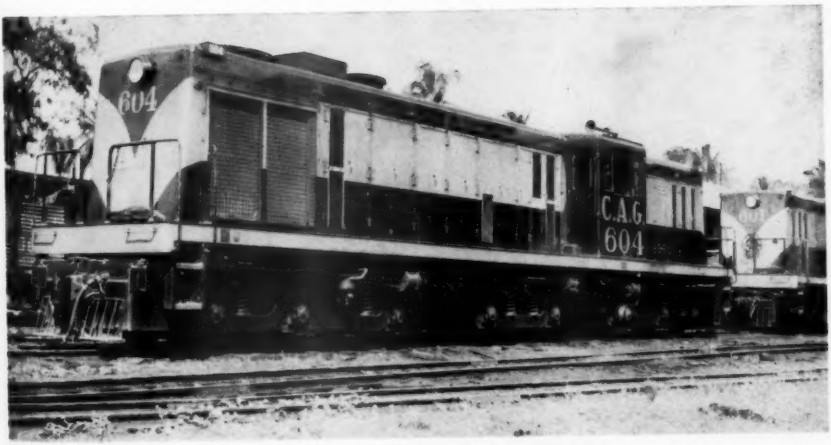
We made several flag stops in the first hour, and had a number of fine views of the volcano Izalco in eruption. At Armenia, our engine took water, and a local "Carro-Motor," followed by Engine 36 on a westbound freight passed us there. The motor cars used to give frequent service, but bus competition on the highway has cut heavily into their revenue.

At 3.45 we rolled into Sitio del Nino, the junction with the Santa Ana branch, and here we met the westbound mainline train from San Salvador, and the train from Santa Ana. The latter had coaches for both mainline trains, and these had white letterboards hung on the sides, with the name of the city to which the car was destined, in the manner of trains in Europe. As soon as our train stopped, there ensued a mad scramble, in the most complicated and fast-moving switching operation I have seen in a long time. While the two mainline engines took water at the double-spouted stone tank, and crowds of women patrolled the sides of the trains, baskets of edibles on their heads, shouting their wares to the passengers, the Santa Ana train's engine rushed here and there with cuts of cars. In just fifteen minutes, our train lost one coach and gained three, the Sonsonate bound train lost four and gained one, and the Santa Ana train waxed fat with cars robbed from the main-liners, including two flats loaded with Hillman-Minxes. When all was finished, the three trains whistled off in unison and departed,

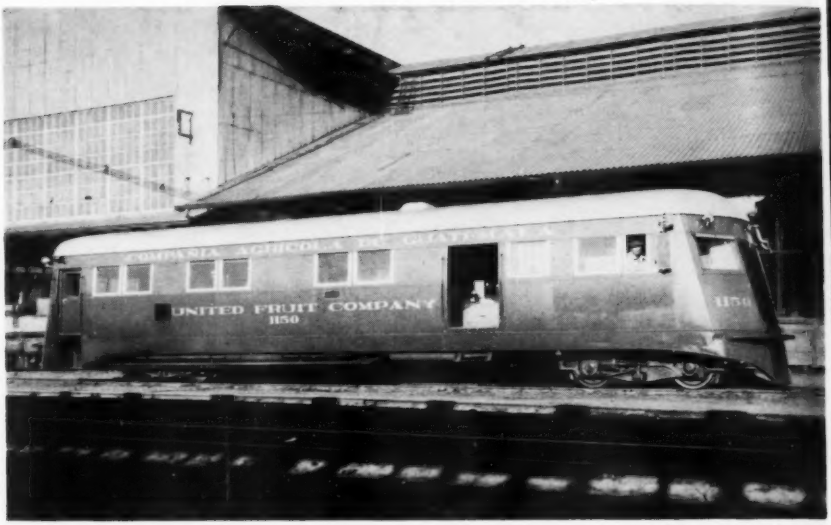


Courtesy of C. W. Witbeck

I. R. C. A. #250 at Escuintla, May 3, 1952.



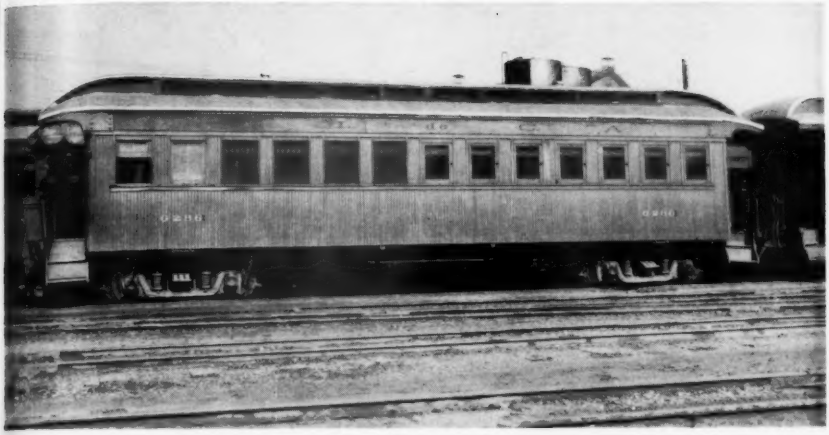
I. R. C. A. #604 at Guatemala City, Sept. 28, 1955.



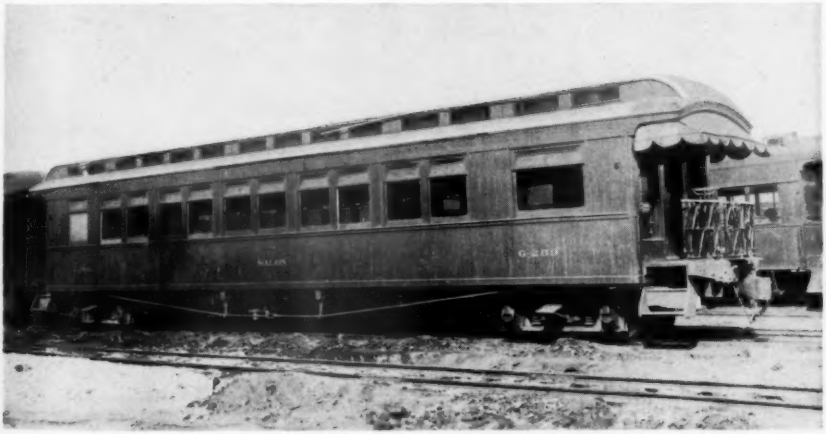
Courtesy of L. T. Haug

Cia Agricola Motor #1150 at Guatemala City, Mar. 30, 1946.

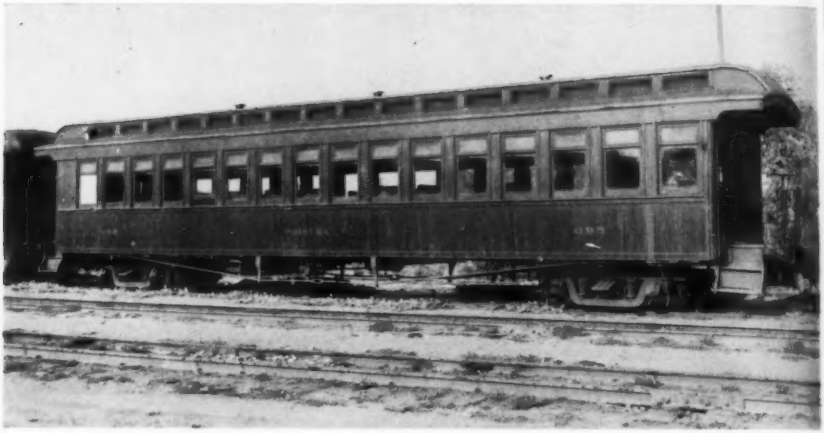
The Through Train from Puerto Barrios to Guatemala City makes a luncheon stop at Zacapa on April 30, 1952.



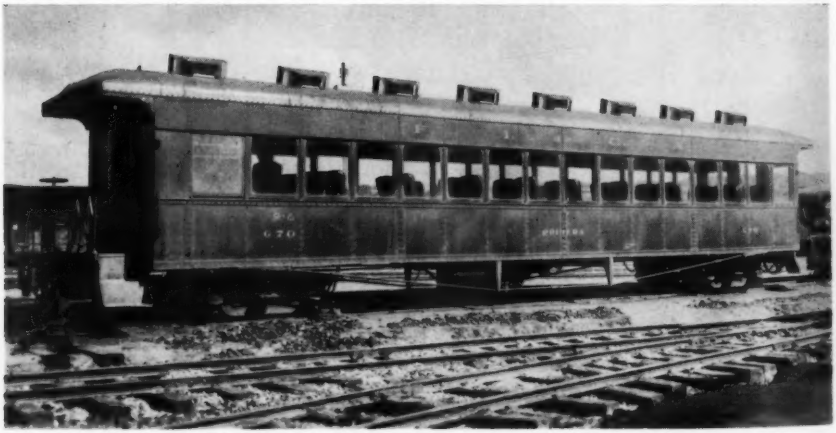
The Oldest Parlor Car on the I. R. C. A. now converted to a Pay Car.



Observation Parlor Cars used to run daily between Barrios and Guatemala City and are reminiscent of the D. & R. G. W. cars of the same type.

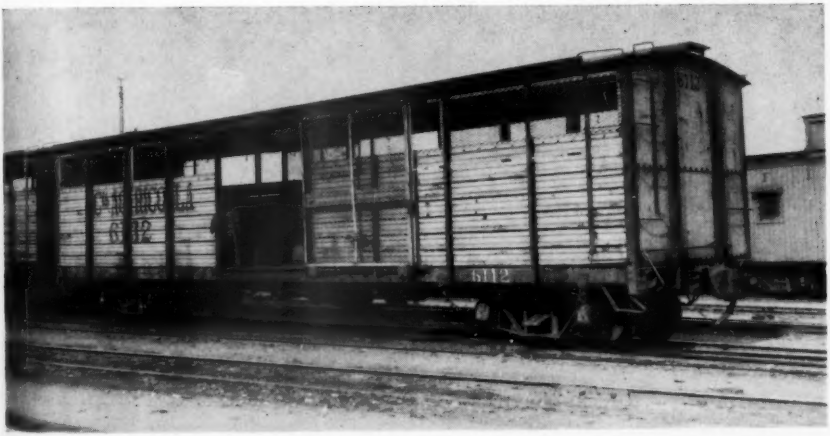


Coach G-95 is the largest type of Wooden Coach on the I. R. C. A. Almost all are now retired.
Guatemala City, Sept. 29, 1955.



New Steel Coach Body mounted on trucks salvaged from scrapped Wooden Coach.
Guatemala City, Oct. 26, 1956.

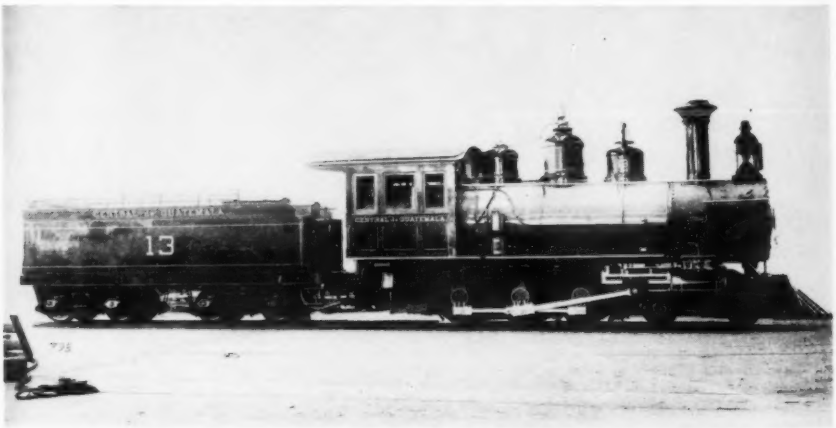
The Salvador Division of the I. R. C. A. has a number of new vestibuled coaches built in the San Salvador Shops. April 28, 1952.



I. R. C. A. 3rd Class Coach, converted from a Banana car and used for Special Trains or Holidays. Guatemala City April 29, 1952.

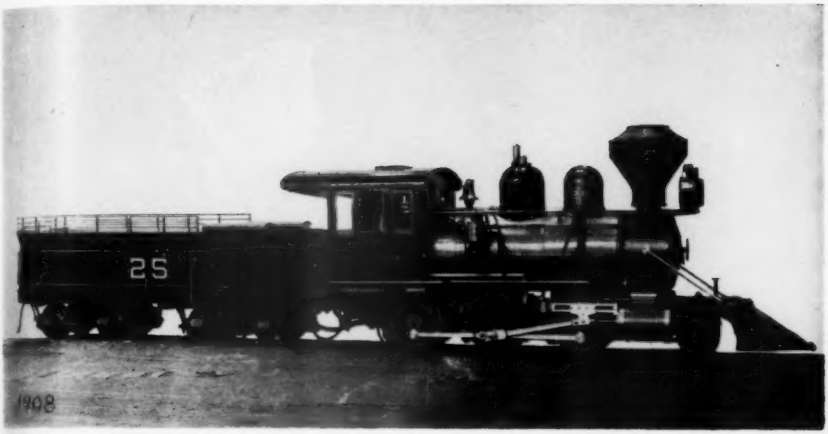
Courtesy of L. T. Haug

Verapaz Ry., Guatemala, 3' gauge. No. 2 with her train ready to leave Panzos for Pancache, April 14, 1947.



From H. L. Broadbelt Collection

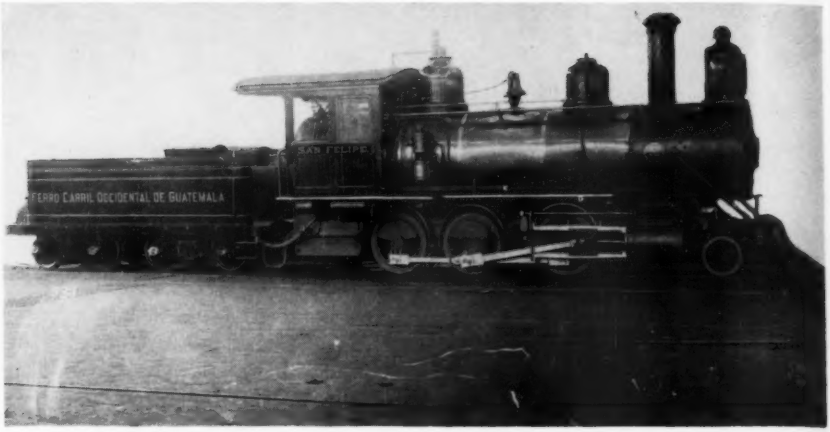
Guatemala Central #13, Baldwin, 1894. Re 18. Guatemala Ry. #75; I. R. C. A. #94.



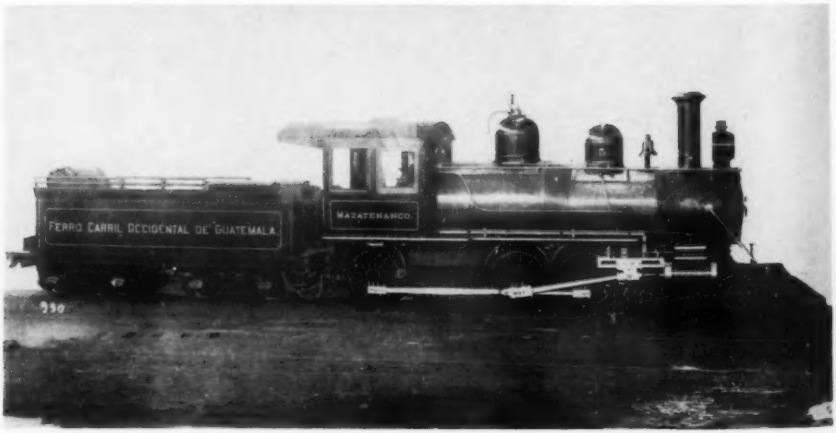
From H. L. Broadbelt Collection

Guatemala Central #25. Originally a Wood-burner, later converted to oil. Guatemala Ry. #82; I. R. C. A. #81.

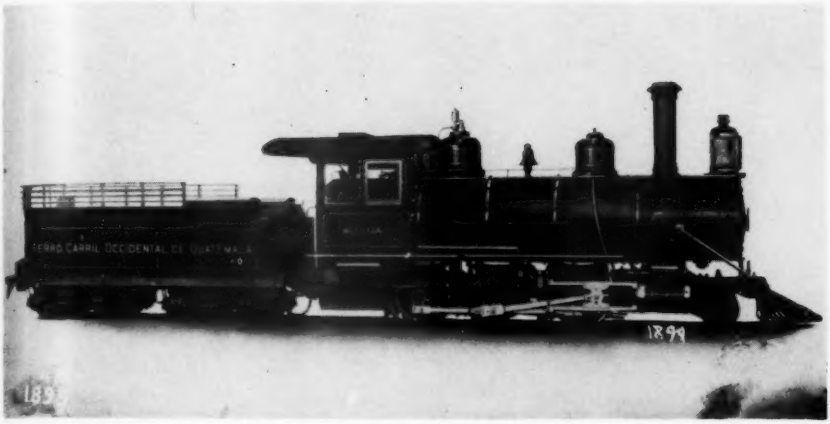
Guatemala Northern #4, Baldwin, 1894. Fell into Motagua River in 1908 and never recovered.



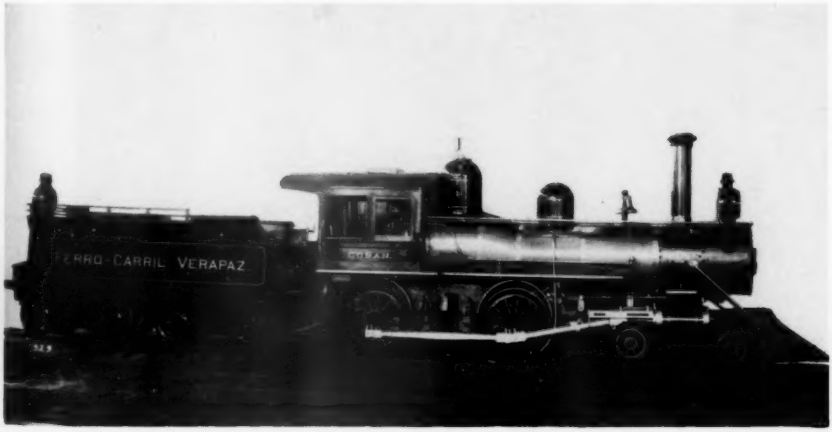
Guatemala Western #4, Baldwin, 1891. Guatemala R. R. #89, I. R. C. A. #83.



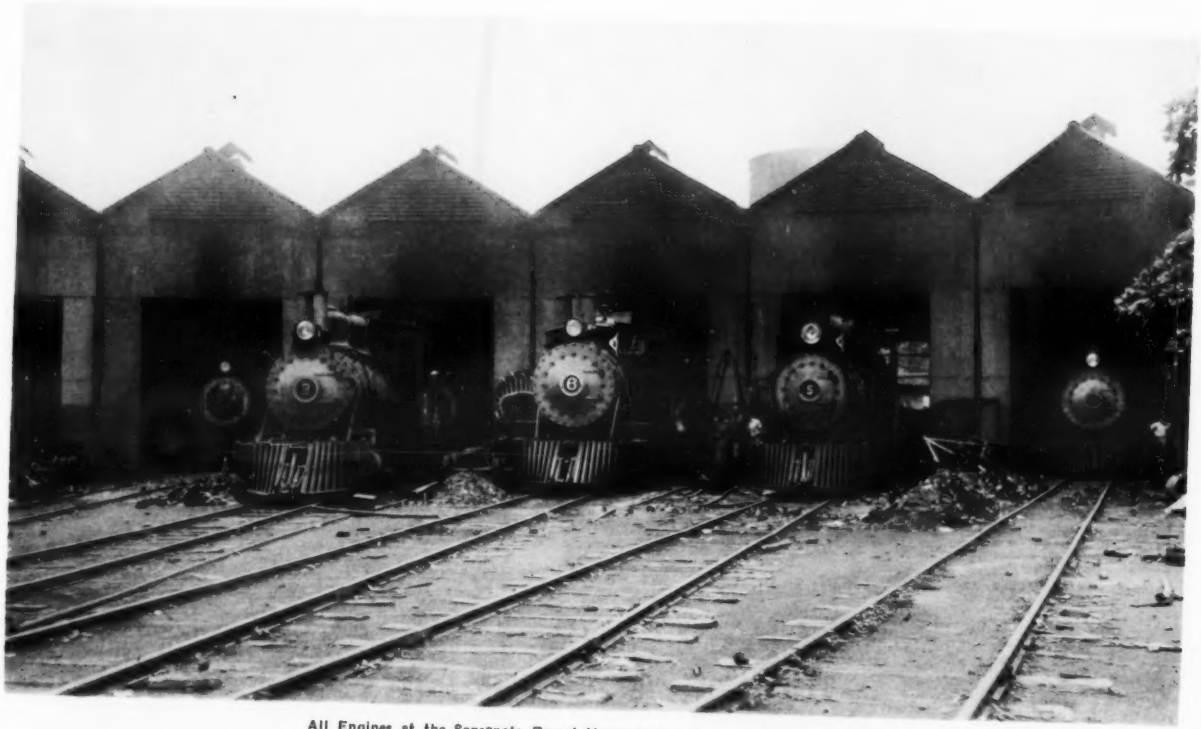
Guatemala Western #5, Baldwin, 1897. Retired before the Road was acquired by the I. R. C. A.



Guatemala Western #6, Baldwin 1904. Last Engine Purchased by the Road and retired after 24 years service.



Verapaz R. R. #2, "Coban," as delivered by Baldwin in 1895.



All Engines at the Sonsonate Round House head out—a photogenic set-up.

leaving the merchants of Sitio del Nino to count their change and go home, as these were the last steam trains of the day.

East of Sitio del Nino No. 7 had to dig in and work hard to haul us up the 2½% grade along the north slope of Salvador volcano, a huge cone which towers over the city of San Salvador. Quiet and presumably dead for over a hundred years, this volcano erupted in 1917 on the north side, away from the city, and out of a pimple on the side of the ancient cone came an enormous stream of lava, which flowed down over the fertile slopes, engulfing over a mile of the Salvador Ry. to a depth of ten feet. Service was interrupted for months, and it was necessary to blast a cut through the hard, black mass before service could be restored. Today, as the train passed through this cut, it was a scene of black desolation, with not a single green thing visible throughout its spread of many thousands of acres.

Our last stop was at Apopa, at the summit of the grade, and there our car was filled with passengers who occupied all the empty seats and standing room as well. From Apopa we descended slowly into the suburbs of the capital city, arriving at the covered, galvanized iron station, at 5.20, on time to the minute."

Though the diesels have come to El Salvador via IRCA, it is doubtful if the Salvador Ry. will dieselize for some time to come. This veritable "Virginia & Truckee" of the 3 ft. gauge lines is thus preserved intact for anyone who would like to have a taste of old time railroading.

Editor's Note—

It may be of interest to many of our members to learn that several members of our Pacific Coast Chapter last fall together visited many of the countries in Central America and had the opportunity of viewing their railroad operation at first hand. In connection with this trip, our Pacific Coast Chapter published "Central American Holiday," by Gerald M. Best for the use and benefit of those who enjoyed the trip as well as those that were unable to make it. This book with its text, colored maps, photographs and tables is a fine piece of work. Altho' the subject of this book and that of this article is similar it does not in any way conflict. The author of this article has confined himself to Guatemala and El Salvador while the book includes those countries as well as Mexico and others. In addition to being of a descriptive nature it has the historic side and the locomotive rosters are exceedingly interesting and valuable.

This handsome brochure may be obtained from Mr. Fred A. Stindt, Chapter Chairman, 978 Emerald Hill Road, Redwood City, California and will be mailed upon receipt of $4.75 postage paid. Incidentally, the proceeds of this book will be deposited in the Equipment Fund of this Chapter. The author has an intimate knowledge of the railways and locomotives of these Central American countries and here is an opportunity of having first hand knowledge and information about them.

Grant's Silver Locomotive

By John H. White, Jr.

Napoleon III's popularity had become greatly tarnished by the late 1860's. Possibly it was his memories of his enormous popularity at the time of the last Paris exhibition in 1855 that prompted the Emperor to again call upon the craftsmen and manufacturers of the world to assemble their handicraft at Paris.

The Exhibition aroused great interest in the United States. By November of 1866 all available space in the American exhibit section had been allotted. The United States was one of the smaller exhibitors, having barely one-tenth of the space required by the French, who had the largest area of any exhibitor. Nevertheless, we were to produce a surprisingly good exhibit, as will be revealed shortly.

The New Jersey Locomotive and Machinery Company had been taken over by D. B. Grant, a New York broker, in 1863. The plant had recently instituted an engineering reform, that of manufacturing all locomotive components to rigidly standardized patterns. While this procedure of interchangeable parts was duly praised, it apparently failed to attract the amount of business desired by its new proprietor. The International Exposition was a magnificent opportunity to gain attention for the newly christened Grant Locomotive Works. Grant decided not only to enter one of their locomotives; which was an innovation in itself since this was the first American locomotive to be shown at a European Exposition; but also to trim it in a costly manner. The idea was as simple as it was extravagant; a standard pattern eight wheeler was to be exquisitely finished and veneered in German silver. It was to be called "The America."

The engine was built in January of 1867 and was apparently shipped to France in February of that year. The British journal *Engineering* reported the locomotive's presence in Paris in their March 8th number.

The locomotive was reassembled and placed in what was tactfully called the American Annex Park. This was an improvised structure which was situated at the upper end of the English Agricultural Shed and was separate from the major American exhibit area. Hardly the most choice of spots but it was typical of the many last minute arrangements that were effected by the officials of the exhibition.

Of the thirty-two locomotives shown, the Grant machine was the only entry from the New World. Being a typical American engine with its slender boiler, large headlamp, pilot, cab, and bar frame; it contrasted strongly with the European locomotives. The British entries were at complete variance to this American exhibit. They were plain yet beautifully designed and built, and thoroughly utilitarian. As with most European machines, they had plate frames. The French engines were similar to the British; perhaps somewhat heavier. Some of the Austrian locomotives, however, had a few American characteristics and were in appearance a rather strange mutation of European and American practices.

The difference in weight and layout of these machines can be partially traced to the differences in operating conditions. The American railroad was rough, with heavy grades and sharp curves. Its light road beds and rails could support only light axle loadings therefore its locomotives had to be flexible, powerful, and have their weight distributed over as great a length as possible. Generally the European railway was a masterpiece of civil engineering, with light grades and substantial roadbeds. Difference in design must also be attributed to taste and varying engineering traditions and techniques.

The "America" was handsome, lean, well proportioned, and as well engineered as any American locomotive of the period. As previously stated, no mechanical innovations were incorporated in the design, excepting the hardened steel rollers under the slide valves.[1] She was a typical American eight wheeler and one of the Grant Works' standard products mechanically. The locomotive's claim to distinction lay then in its finish. The completeness of the finish was carried to infinite extremes. The frame, side and main rods, valve gear, equalizers and springs were machined all over and draw filed. The boiler, smoke stack, valve boxes and cylinders were jacketed in German Silver. The inference has always been that the engine was gilded in some form of genuine silver. German or nickel silver is an alloy of copper, nickel, and zinc. No contemporary mention is made of any of the fittings being pure silver.

The polished stack covering was insulated, appropriately enough, with a layer of Plaster of Paris between it and the actual smoke stack tube. This was to protect the nickel silver from the heat of the exhaust, which would tarnish it.

Made of ash, maple, black walnut, mahogany, and cherry, the cab was a fine example of the cabinet makers art. The marquetry might have gained the praise of Boulle, the French master of delicate inlay work.

The tender was elaborately scrolled and painted. A portrait of General Grant and the Arms of the Republic were reportedly painted on the tender's side. A print in *Engineering* for July 1867 shows neither but does show rich scroll work and the word "America." This may be seen in the photograph fig. 1; also note the legend "Chicago, Rock Island and Pacific R. R." on the dicky. The tender trucks were one piece forgings and were finished bright.

The most expert and complete description of the "America" was rendered by Zerah Colburn.[2] Colburn felt a certain affinity to the locomotive since he had been the superintendent of the New Jersey Locomotive and Machinery Company, which he described as "a water driven [3] establishment of moderate size." In the 1850's he left Paterson, came to London and eventually founded the journal *Engineering*. Before his emigration he had a well established reputation as a locomotive designer and technical writer. His description is at once nostalgic and sympathetic as if he were interviewing the son of an old acquaintance.

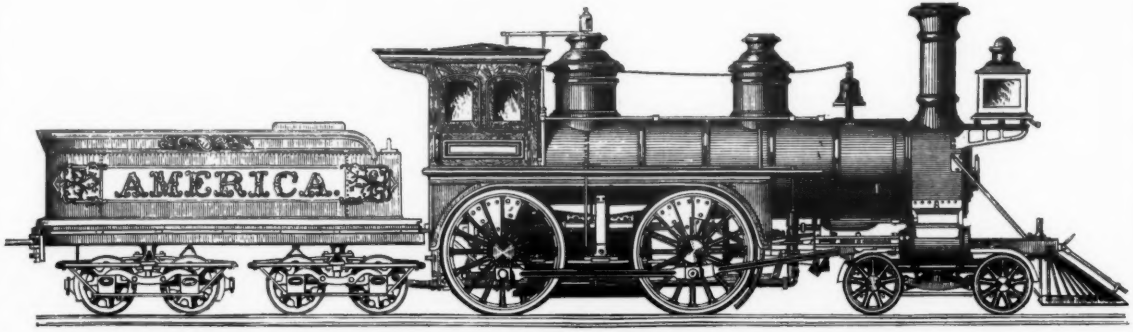
[1] Captain R. C. Bristol—Patent 58,980, November 13, 1860.
[2] *Engineering*, July 26, 1867.
[3] Somewhat expanded by 1867, production was two or three locomotives per week.

Colburn expressed a prevailing British opinion that "it even out-Yankees the Yankee engines themselves . . ." He goes on to describe the need for agility considering the rough road bed of the United States Railroads. The bar frame and bogie truck so popular in America were quite foreign to the European engineer. The most startling practice however was the use of chilled cast iron wheels for the trucks and cast iron centers for the driving wheels. Wrought iron was the only material conceivable for such severe service to the European mind. It was noted that Canadian Railroads were becoming converts to hollow spoked cast iron drive wheels and were abandoning the British cult of the wrought iron centers. The boiler would seem quite thin to a non-American, being fabricated of ⅜″ Sligo iron (Pennsylvania charcoal plate). The tubes were 2″ in diameter and made of copper. The 142 tubes offered a surface of 812 square inches. Water tube grates, the invention of James Millholland, were used as the fuel was anthracite coal. Without water the engine weighs 27½ tons and the tender 10 tons when empty.

Colburn concludes with the following:

> "Look at the cow-catcher. It is made of 1 inch round wrought-iron rods, and is pretty stiffly braced back to the smoke box. But it does not look strong enough to our eyes, and we have also seen engines which had been thrown from the line, and the drivers killed, by the doubling up of a cow-catcher, such as the one shown in our illustration, and this from striking a yearling steer.
>
> "That head light is of the usual American pattern, with a silvered parabolic reflector 22 inches in diameter and 15 inches deep in its full concavity. A good head light is expected to show in a dark night sufficient light to enable the time to be seen on a watch, the observor standing 1000 feet or nearly a quarter of a mile in front.
>
> "The cab, made of curled maple and walnut wood, is more than usually smart, but the cabs of American engines are generally showy, sometimes very much so, and we have seen them decorated with prints and photographs, as if they were the offices of professional gentlemen rather than the posts of duty of hard-handed engine-drivers . . .
>
> "The sand-box is worked from the foot-plate. Its weight, big as it looks, is but 128 lbs. The bell, with its supporting columns and saddle, weighs 220 lbs. It is always used, instead of the whistle, around stations. The whistle itself is a howling reservoir of sound, with an unearthy roar instead of a shriek . . ."

The Exposition opened on schedule April 1, 1867 though not yet complete. The "America" was an immediate favorite with the crowd. Its extraordinary dress won the approval of the novice and mechanical dilettante. Secondly the engine gave an impression of great size due to the large cab, head light, pilot and the general angularity of the American design. It must be remembered this variety of locomotive was strange and novel to the European public. One report had it that Napoleon III wished to purchase the Silver Engine. There was a popular clamour to get up steam and have a trial run.



THE AMERICAN LOCOMOTIVE AT THE PARIS EXHIBITION.

Diameter of driving wheels, 5ft. 7in.
Diameter of bogie wheels (engine and tender), 2ft. 6in.
Diameter of driving axle, 6¼in.
Diameter of driving axle bearing, 6¼in.
Diameter of bogie axle, 4¼in.
Diameter of bogie axle bearing, 4¼in.
Number of tubes (2in), 142.

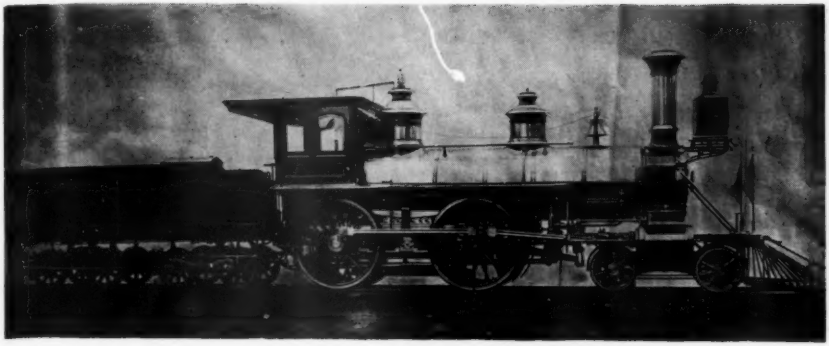
Distance from centre to centre of coupled wheels, 8ft. 6in.
Distance from centre to centre of bogie wheels, 5ft. 9in.
Length of boiler over all, 19ft. 11in.
Diameter of ditto (outside), 4ft.
Length of fire-box, 6ft. 2in.
Total heating surface, 950ft.

Total grate bar surface, 16ft.
Diameter of cylinders, 16in.
Length of stroke, 22in.
Length of connecting rod, 7ft. 3in.
Length of tubes, 10ft. 11in.
Depth of fire-box, 5ft.
Length of ports, 1ft. 4in.
Width of ports (steam), 1¼in.

Width of ditto (exhaust), 2¼in.
Height of centre of boiler from rail, 6ft. 4in.
Height of top of chimney from rail, 14ft. 2in.
Weight of engine (light), 27½ tons.
Ditto tender (light), 10 tons.
Thickness of plate in boiler shell, 7/16in.
Ditto fire-box, ½in.

Courtesy of The Smithsonian Institution

The "America" from "The Engineer," January 17, 1868.



The "America," built by the Grant Locomotive Works in 1867.

The "America" and the medal she won at Paris in 1867.

While the average visitor to the Exposition was pleased by the "America," that can hardly be said for many continental engineers. The engineer was immediately struck, and no doubt, many were offended, by the same showiness that so pleased the crowd. The correspondent for the *Scientific American* noted this feeling among European technical circles and felt that the real engineering merits of the machine were overlooked by many because of her ostentatious get-up.

Apparently it was difficult for United States locomotives to please European engineers in the 19th century. During the Paris Exhibition of 1878 the Philadelphia and Reading Railroad displayed Wootten's 408. *Engineering* commented: "the locomotive by which the United States was represented (the 408) at the Paris Exhibition was one which underwent at the time a good deal of free criticism, on account of the rough finish of many of its details, and from the entire absence of any pretention to the special neatness of design which is not unnaturally looked for in an exhibited engine." The journal went on to admit that Wootten's design was of mechanical merit. This line of comment is of course the very opposite of the opinions expressed concerning the "America."

The British were generally much kinder to the Grant locomotive than other European engineers and usually had a few complimentary words to say. The British manufacturer had as little reason as anyone for generosity to American products. They considered themselves the locomotive builders of the world. The United States was, however, beginning to capture certain areas of the export machinery market, especially those in South America. Possibly the prevailing British belief that we could not compete successfully in the long run because of our expensive labor cost, calmed these fears. Whatever their reason or lack of reason the British engineers and technical press were very kind to their cousins. *Harpers Monthly Magazine* for November 1867 reported that the United States "owe half of their medals to the common sense of the English manufacturers who are never to be deceived about the value of a piece of work . . ."

It was a Britisher who in fact convinced his fellow jurymen of the merit of the "America." The French and Austrian jurors were not at first going to consider the Grant entry, stating that she was too light in many of her parts and was obviously built purely for show purposes.[4] The English member then asked for a close inspection and explained the need for an elastic design in view of U. S. trackage. The pragmatics of American locomotive design were discussed. The long wheel base, the Bissell truck, the light flexible bar frame and other mechanical features made sense when their functionality was explained. The excessive decoration was explained away by Mr. Grant's bland remark that American locomotive engineers insist on more show!

The jury's original skepticism was converted to acceptance and admiration. So much so that the highest award given to any locomotive present, the Gold Medal, was given to the Silver Engine, "America." The United States did very well in general; being one of the smaller exhibitors we were the second largest recipient of prizes.

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[4] *Daily State Gazette,* Trenton, New Jersey, July 31, 1867.

Opinions varied as to the reasons for success. Mr. Beckwith, the U. S. Commissioner to the Exposition, stated that we did well because our products were of a truly practical design rather than merely appealing to the artistic senses. Mr. Auchincloss, one of Mr. Beckwith's assistants, stated conversly that in the instance of the Grant prize we won because European builders furnished their engines in "a solemn lead color or funeral black."

Formal presentation of the awards was held July 1, 1867. The Emperor presided amid great ceremony. An elegant procession was backed by a huge orchestra and choir and thus with all the pomposity that could be mustered the fading 2nd Empire produced a great spectacle. Abdul Azizy the reform Turkish Sultan was the Emperor's honored guest.

Just a few days after the award ceremonies, July 3, the news of Maximillian's execution reached Paris. An official state of mourning was declared. The "America" had been innocently decorated with flowers for the July 4th anniversary. The Paris press in a moment of undue sensitivity complained, "It is evident that the news of Maximillian's death has not penetrated this locomotive."[5]

Mr. Grant poured $35,000 into the building of the Silver Engine. For his expenditure he created a prize winning machine, invaluable publicity for his works and what has become a legend.

The subsequent career of the Silver Engine is generally known and has been told before.[6] Yet it might be well to summarize for the sake of completeness. According to the noted sources Mr. Alan Nanval, Purchaser of Supplies, was so impressed by the "America" which he saw in Paris that he persuaded President Tracy of the Chicago, Rock Island, and Pacific Railroad to purchase the locomotive. According to these accounts the locomotive was purchased for $10,000, the usual price for an eight wheeler in the 1860's, at the close of the Exposition. The scheduled closing date was October 31, 1867, yet "America" was not on the property of the C., R. I. and P. until May of 1869. There seem to be some questions posed by the price and time interval. As a bit of conjecture it would seem reasonable to assume that Mr. Grant was not overly willing to sell a locomotive which cost him $35,000 for such a bargain price of $10,000 without due consideration. The twenty months or so in between may have been consumed by negotiations between the builder and the railroad.

The "Silver Engine" made her maiden run on the Rock Island from Chicago to Council Bluffs opening the latest extension of the railroad on June 4, 1869.[7] In 1871 she proved herself more than a showy prima donna by winning a U. S. mail contract by merit of her speed and power.[8] By 1886 she was in pay train service and continued in such for the rest of her active career.

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[5] *Harpers Monthly Magazine,* November 1867.

[6] See: *Railway & Locomotive Historical Society Bulletin 38.* October 1938; *Rock Island Magazine,* October 1922.

[7] Her C. R. I. & P. number was 109.

[8] When built she was rated at pulling a 200 ton train at from 40-50 M.P.H.

In and around the turn of the century the "America's" boiler was relegated to stationary service. A boiler explosion reduced the one remnant of the proud machine to the lowest level. A Blue Rock, Illinois florist, George Heim, purchased the old boiler for $85.00, patched it up and used it for low pressure green house work. By about 1910 the shell proved incapable even for this light service and was scrapped.

The Grant Works was thoroughly satisfied with their triumph in Paris for as late as 1890 they advertised rather smugly with an American Bank Note Engraving depicting both faces of the Gold Medal and the "America."

The New Haven's "Combines" and Baggage Cars

By Charles E. Fisher

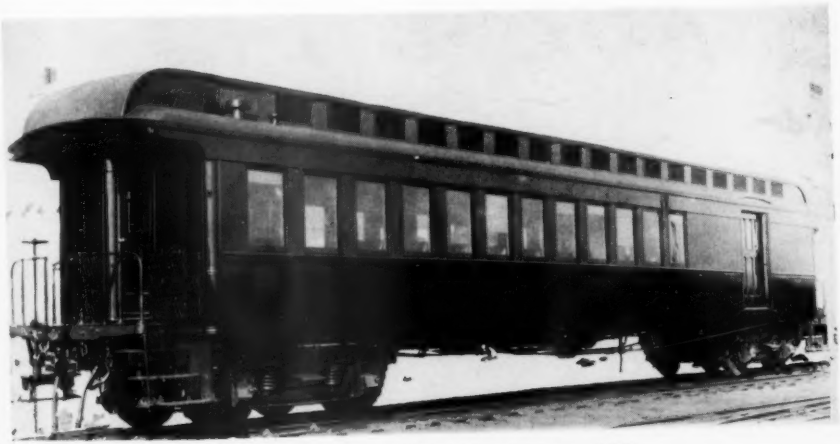
In my previous article I outlined some of the cars and their uses before the advent of steel equipment on the New Haven R. R. Let us now take a brief look at some of the other passenger equipment used by this road and first consider the "combines."

According to the Inventory of Equipment dated December 31, 1912, the New Haven owned over three hundred of these combined baggage and passenger coaches and I'm tempted to state that very few of our railroads could equal this number. In the main, the passenger sections of these cars were used as a smoker and the seats were finished in leather or some similar material as in the long smoking cars. Thus, a two car train made up of a "combine" and coach furnished a car for non-smokers as well as smokers and a baggage compartment. Where the traffic was light, this was sufficient, where it was heavy, more equipment could be added. Nearly every train out of Taunton, as I recall them, carried one of the "combines" and sometimes two on the Boston trains—one from New Bedford and one from Fall River-Newport. Frequency of service prevented an accumulation of "head end" material for it was forwarded upon the next train as soon as it was received. Most of the suburban trains serving Boston carried these "combines" with as many additional coaches as needed.

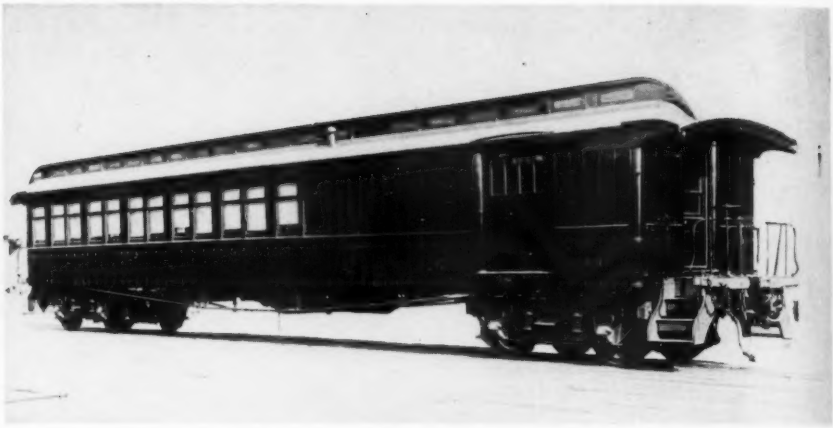
Altho' this was the general use of these cars, there was one other which is of interest and showed good judgment on the part of the management. Some of the seats of these cars were finished in red upholstery as in the passenger cars and they were used as non-smokers. Towns located on a branch would have one of these cars on the branch train and, upon arrival at the junction, these cars would be attached to the through train for Boston. Thus, the passengers with their baggage or bundles and the baggage, mail and express matter, instead of changing or being changed at the junction, would go right through without any hindrance. I don't know for certain, but I've been advised that the Old Colony R. R. used this method on their many branches and the New Haven continued its use.

Suppose we take an example and refer to our summer timetable of 1912 again. This timetable shows five trains originating at Hyannis that ran through from Yarmouth to Boston. Chatham, however, at the end of the Chatham Branch had one through train that summer. The additional trains from both Hyannis and Chatham probably carried one of these "combines" that was attached to the rear of the train from Provincetown and thus offered a through car without change at either Yarmouth or Harwich. The same convenience was continued in the winter schedules despite the reduction in train service as the vacationists had all gone home. Similar through service was given on many of the New Haven branch lines for the benefit of the passengers as well as a saving in the matter of operation to the road.

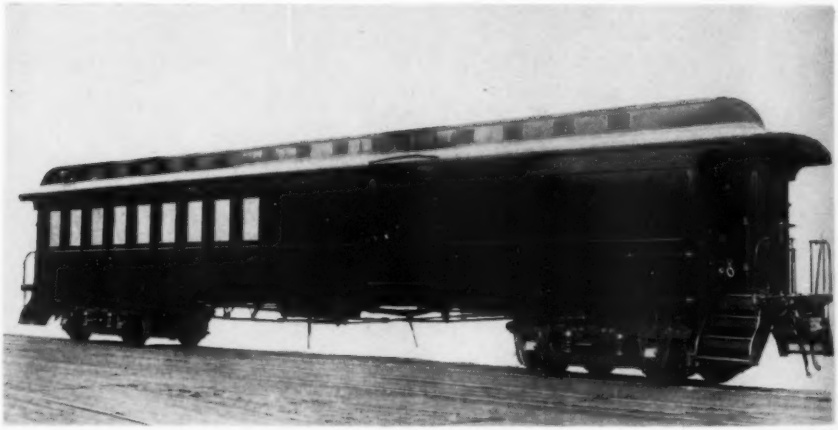
New Haven "Combine" #2347. New Haven Shops 1875.



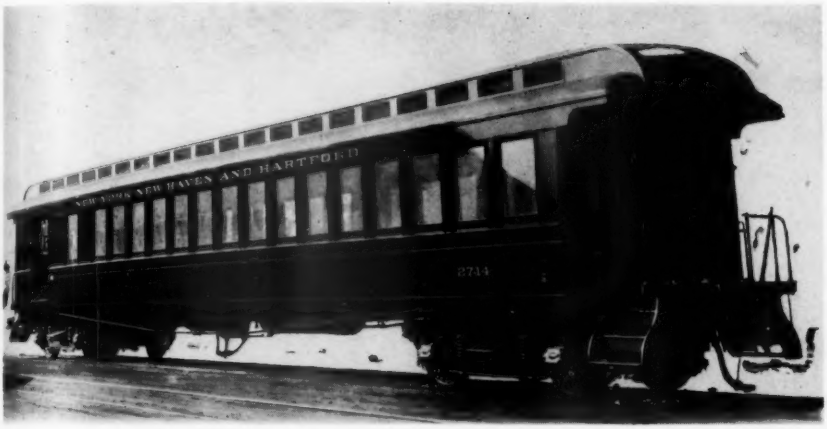
New Haven "Combine" #2358. New Haven Shops 1888.



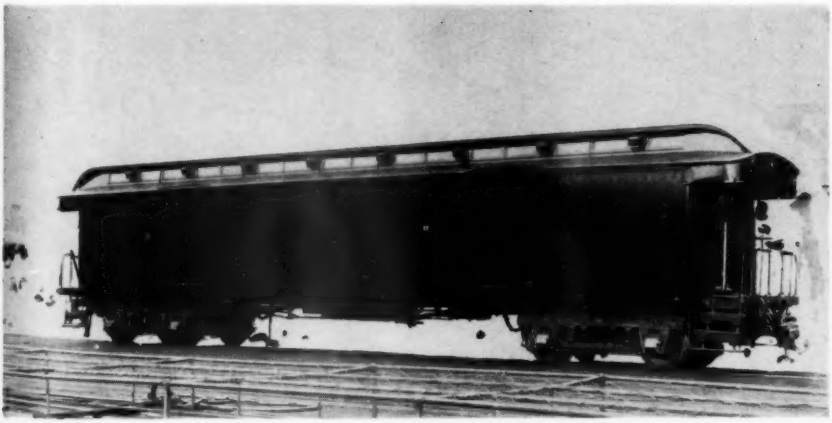
New Haven "Combine" #2455. Wason 1891.



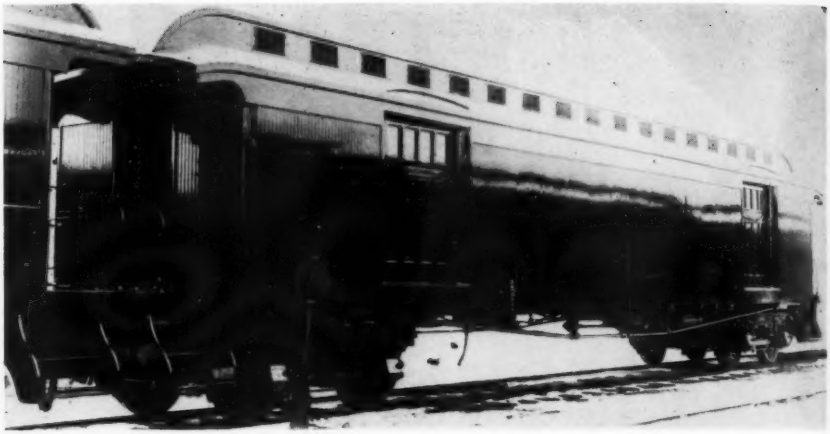
New Haven "Combine" #2528 with extra large baggage section. Built by Old Colony R. R. 1880.



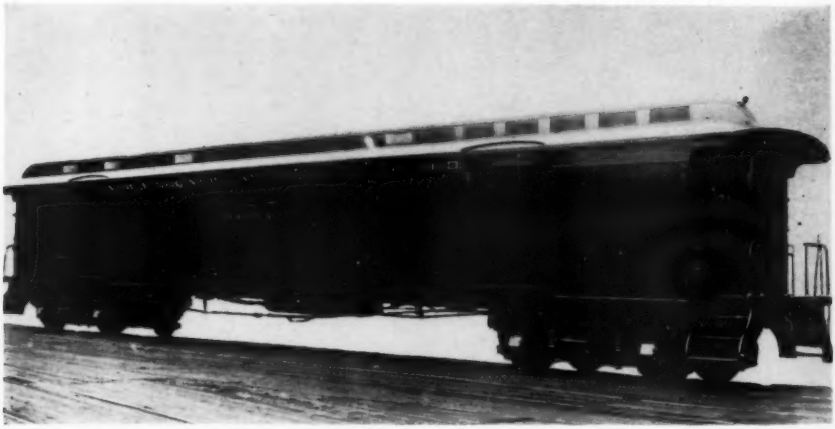
New Haven Mail "Combine" #2714. New Haven Shops 1901.



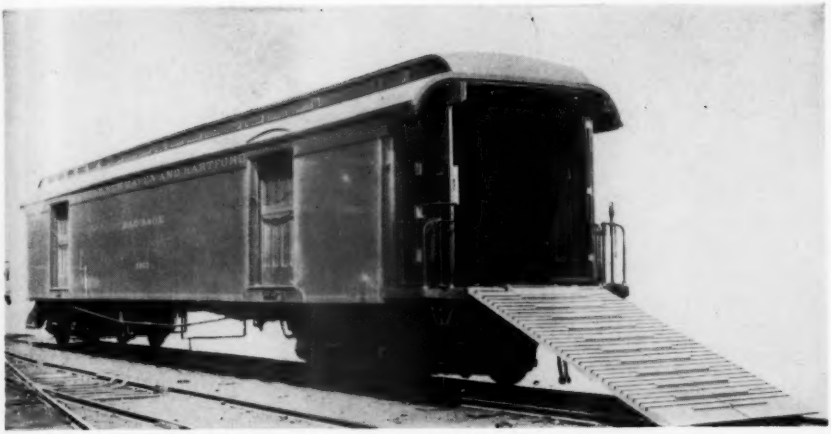
New Haven Baggage #2882. New Haven Shops 1886.



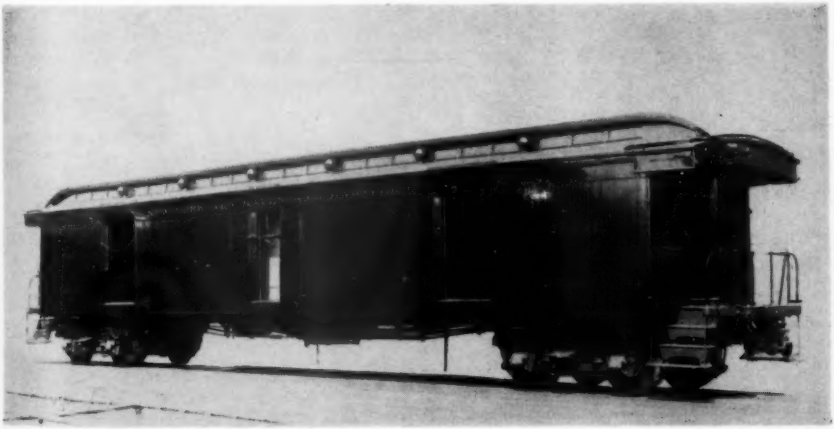
New Haven Baggage #2928. Old Colony R. R. 1874.



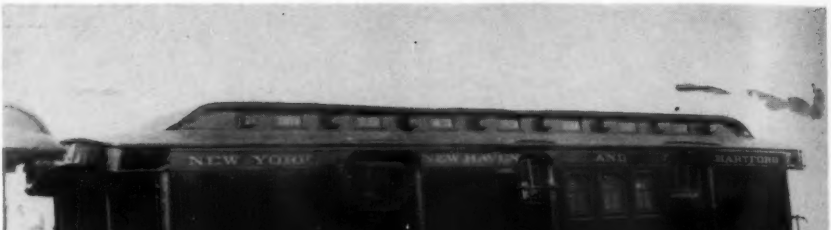
New Haven Baggage #2965. New Haven Shops 1896.



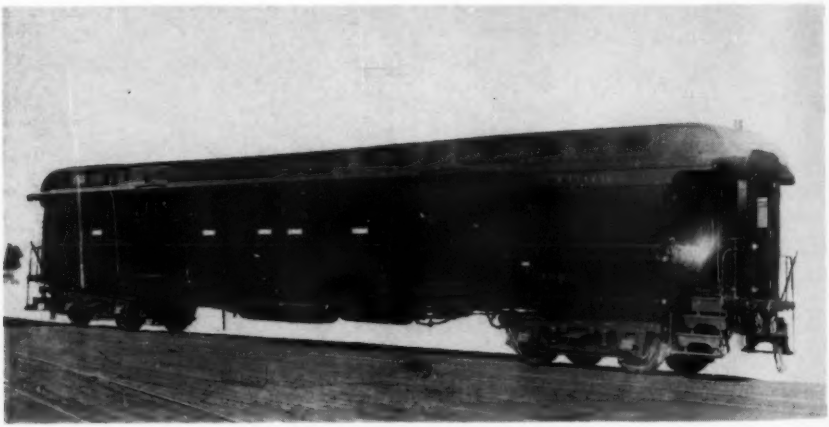
New Haven Horse & Baggage #2969, ready for loading Horses. New Haven Shops 1898.



New Haven Baggage, Mail, Express #3204. Built by Naugatuck R. R. 1887.



New Haven Baggage, Mail, Express #3211. Built by Wason, date unknown.



New Haven U. S. R. P. O. #3260. Bradley, 1893.

In Taunton, there was a service which was slightly different than either of the above. Altho' the city of New Bedford was served with a steamship line directly to New York in the summer time, there was quite a large amount of express matter between the many mills and business firms of that city and the "outside world." True, these packages could be loaded in the baggage compartment of the Boston-bound trains and the sorting done in Boston or, they could have been unloaded at Taunton and reloaded for Providence. To eliminate the latter possibility, one of these "combines" was attached to the rear of certain trains leaving New Bedford and, at Taunton, it was attached to one of the trains from Plymouth to Providence of which there were three daily. I don't believe there were ever enough through passengers from New Bedford to Providence to warrant this service but the express matter did. Furthermore, after this three car train out of Taunton, arrived at Attleboro on the Shore Line, it picked up enough passengers into Providence to help fill up all of these coaches. Demands on the part of labor for compensation of coupling and uncoupling cars and the granting of these demands were the start of the decline of these branch lines. People with their bundles don't like to shift from one car to another and whether these demands would have resulted in a greater cost than the transfer of the contents of the baggage car is something we do not know but—they never should have been granted.

These "combines" had quite a wide variety in the size of the baggage compartment as some of the illustrations will show. In later years, the Old Colony "combines" were pretty well standardized and all of the copper sheathed "combines" of the New Haven had the same sized baggage compartments. The illustration of car #2358, built in the New Haven Shops in 1886 represents the majority of these "combines," while the #2455, built by Wason in 1891 is representative of many on the Old Colony. The #2528 was evidently built for a run requiring an unusually large baggage compartment.

One other type of "combine" deserves mention and these cars had a railway post office in one end and a smoking section in the other. The three trains between Taunton and Lowell each had one of these cars. They were three car trains made up with a long baggage, the mail-smoker "combine" and a long coach. The "combine" was made up so that the railway post office end was next to the baggage car as there was a partition that prevented anyone going through the mail compartment. "Charlie" Sampson and his switcher always turned these trains on the wye at Taunton and the same must have been done at Lowell. The New Haven roster of 1903 shows the road owned fourteen of these cars built between the years 1876 and 1901. The 1903 roster also shows the road as owning four baggage-mail-smoking cars all built between 1869 and 1880.

The New Haven served a highly industrialized section of New England and the products of these firms were shipped throughout this country. The New Haven furnished the cars for this movement and many of them, in regular movements penetrated the mid-west and some went through to the Pacific Coast. The majority were open platform

cars but there were some, as well as the Railway Post Office cars that were vestibuled and assigned the Shore Line trains so that the entire train would be vestibuled. Some of these cars had the vestibule stanchions, without the doors as shown in the illustration of the #3260. At one time, the New Haven ran between New York and Boston a mail train composed of and consisting only of four of these cars.

These baggage cars came in a wide variety of lengths, roof mouldings and services. We were never favored with many of them in Taunton in my boyhood days as the "combines" did most of the work. However, the "Fall River Line Boat Train" always carried a long baggage car, vestibuled and this car returned on the first "Boat Train" in the morning. The first train up from Newport carried a long mail-baggage car and this train went into Boston via Randolph. The first train out of Boston via Randolph carried a mail car and this was placed on the head-end of the first train for Newport where it remained all day until around 5:00 P. M. when it left Newport for a similar return movement to Boston. Both of the express trains from Boston in the A. M. carried a long baggage car for Fall River-Newport making the return movement in the P. M. and the 12:50 P. M. express carried a similar car for the same destination that left Newport a little after 5:00 P. M. All of the three trains to Lowell carried long baggage cars and these seemed to be adequate for the service. Perhaps the illustration of the #2965 is typical of these cars that came to Taunton. I have also shown one of the horse and baggage cars in #2969. The wealthy people liked to have their horses with them in the summer time and these horse cars served this purpose and, when not used in this service they were used as baggage cars.

The New Haven owned, according to the 1903 register, twenty mail and baggage cars with the mail compartment in one end, the baggage compartment in the other. However, there were ten cars in the 3200 series, listed as bagagge, mail and express and in these cars, the mail compartment was in the center. If this compartment was sealed from passing through, as was the case in most mail cars, there must have been two baggagemen or else the one was busy going from one compartment to the other unless an express messenger was carried in the express compartment, which was probably the case. Some cars were lettered "Express" and some were lettered "Baggage." As for the all mail cars, these were used chiefly on the Shore Line trains. Other portions of the road had their mail delivered in the combined mail-baggage or the mail-smoking cars but, there was a lot of pouched mail that was carried in the regular baggage or "combines" and handled by the baggagemen. Strictly speaking, there were only two trains each way daily between Taunton and Boston that carried the mail in a mail car but there must have been half a dozen others that carried pouched mail in the baggage cars and the mail was handled in this fashion to points like Providence, Middleboro for Cape Cod, Plymouth and New Bedford.

All of these wooden cars, with their gold striping and lettering are only a memory now but fifty years ago, these cars, fresh from the shops, made a lasting impression. For some time, it was the New Haven

practice to shop all of the cars of a train at one time and they were returned to service all at the same time. This applied to the Shore Line trains and it also applied to the "Boat Train" and the "Dandy." Some times there would be a delay in getting some of the cars back into service and the substituted equipment would make quite a contrast with that just out of the shops but equipment and locomotives, fresh from the shops were always quickly spotted by the younger generation.

Author's Comments:

In Bulletin #103 the illustrations of coaches 784 and 794 were placed in close proximity to see if they would arouse the attention of our members. The title for coach 794 was taken from the jacket of the plate but, it seems unlikely that this wide vestibule coach was built in 1881 and it also seems unlikely that it was an older car rebuilt. In the New Haven list of passenger equipment, the builder and date of construction is not given.

We do know the car was used in Boston-Washington service. On May 12, 1890, the Philadelphia Day Express made its first trip over the Shore Line and Pennsylvania R. R. to be discontinued on January 4, 1891. As the "Colonial Express" it appeared on the schedules Jan. 18, 1892 but running through to Washington. One of the roads participating in this service was the New York, Providence & Boston R. R. which was leased to the New Haven on April 1, 1892. Coaches 793 and 794 were very similar and, it seems to this writer that these two cars were ordered by the N. Y. P. & B. R. R. for service on the "Colonial Express" but the road being almost immediately leased to the New Haven, the proper entries and records were not made. At any rate, this will have to serve until something better turns up. I was in hopes that some of our members would question the title to this photograph. It's nice to have the confidence of our membership but, mistakes can be made and wide vestibuled coaches were not built as early as 1881.

Worth Reading

Compiled by

ELIZABETH O. CULLEN, Librarian (Ret.) Bureau of Railway Economics Library, Association of American Railroads, Washington, D. C.

BOOKS AND PAMPHLETS

Along the Path of Centro Railway, by Central Treaty Organization, Public Relations Division, Yeni Meclis, Ankara, Turkey. 24 p., illus., map. "A narrative . . . telling how Iran and Turkey, with the support of Centro Associates, are repeating history by linking their countries with a modern railway." ". . . Mrs. Akten Esendag, an architect employed by the Turkish Ministry of Public Works, who helped design many of the station buildings for the Mus-Tatvan Section." (In photograph p. 18). Free on request, to Ankara office.

Benguela Railway Company—Companhia do Camino de Ferro de Benguela. 34 p., illus., map. African Management, Caixa Postal No. 32, Angola, Africa. Report free on request to London Committee, Princess House, 95 Gresham St., London, E. C. 2, England.

British Trains of Yesteryear—A Pictorial Recollection of the pre-1923 Railway Scene, ed. by C. Hamilton Ellis. Unpaged, Illus. London, England, Locomotive Publishing Co., Ltd. $4.00.

Canada. Railway Operation Continuation Act—assented to 2nd December, 1960. 4 p. Ottawa, Canada, Roger Duhamel, Queen's Printer. Price from Printer.

Code of Rules Governing the Condition Of, and Repairs To, Freight and Passenger Cars for the INTERCHANGE OF TRAFFIC, Effective January 1, 1961, adopted by Association of American Railroads Operations and Maintenance Department. 379 p., illus. Chicago 5, Ill., AAR, 59 E. Van Buren St. $1.20.

Conducting Transportation, by B. H. Moore. 117 p., illus., tables. Washington 6, D. C., Association of American Railroads Accounting Division, $2.25. ". . . describes the many facets of the work of the Transportation Department and allied activities. . . . designed to correlate the accounting principles with the physical work. . . ."

Economic Atlas of the Pittsburgh-Youngstown Economic Area, edited by Arthur Dongini, director of Industrial Development, with foreword by John W. Barriger, president, Pittsburgh & Lake Erie Railroad. v, 46 p. (23″ x 23″—colored plates). Pittsburgh, Pa., Pittsburgh & Lake Erie Railroad Co. $10.00.

Erastus Corning—Merchant and Financier, 1794-1872, by Irene D. Neu. xi, 212 p., illus. Ithaca, N. Y., Cornell Univ. Press, $4.00. "Creator and first president of the New York Central Railroad, Erastus Corning was one of the outstanding American businessmen of the mid-nineteenth century."

Evolution of Trailers on Flat Cars, by R. L. Milbourne, director, Flexi-Van Sales and Service, New York Central System. Address ". . . on the development, pricing and future of the various concepts of railroad containerization" before Bulk Packaging and Containerization

Institute, New York City, Jan. 31, 1961. Free on request to author, 466 Lexington Ave., New York City.

Fallacies About Piggybacking—and the Facts! (Answers to recent allegations by International Brotherhood of Teamsters) Dated Feb. 1, 1961. 10 l. Washington 6, D. C., Association of American Railroads. Free on request.

General Services Administration in Regulatory Rate Proceedings—A Report (on nature and scope of its transportation and utility activities) by Transportation and Communication Dept., Chamber of Commerce of the United States, Washington 6, D. C. (40) p. Free on request.

The Human Need for Rapid Transportation. 8 pp., illus., maps. Mansfield, Ohio, Ohio Brass Co. Free on request.

(Interstate Commerce Commission)—*Report on Commission's Organization and Internal Procedure, Oct. 1, 1960.* First report to ICC by Special Advisory Committee on Interstate Commerce Commission Practices and Procedures. xi, 58 p., fold charts; *Organization and Procedures Survey of the Interstate Commerce Commission, Washington, D. C.,* by Boos, Allen & Hamilton, management consultants. 4 vols. Study authorized by U. S. Bureau of the Budget.

An Introduction to Transportation Engineering, by William W. Hay, professor of railway civil engineering, Univ. of Illinois. xiii, 505 p., illus., diagrs. New York 16, N. Y. John Wiley & Sons, Inc. $11.75. "A unified exposition of the basic principles and problems involved in the operation of all modes of transportation."

The Last of Steam, by Joe G. Collias. 269 p., illus., Index of steam locomotives by railroads. Berkeley 10, Calif., Howell-North Books, $10.00. "A billowing pictorial pageant of the waning years of steam railroading in the United States. . . . minimum of text and 300 large photographs, never before published . . ."

Lokomotiven und Wagen der Deutschen Eisenbahnen—Geschichtliche und Technische Entwicklung, by Dr.-Ing. Erhard Born, Minden (WESTF.) 180 p., illus. Mainz und Heidelberg, Germany, Huethig & Dreyer GMBH. $2.15.

Main Lines Across the Border, by Oswald Stevens Nock and Eric Treacy. xvi, 195 p., illus. Edinburgh 9, Scotland, Thos. Nelson & Sons, Ltd. Parkside Works. $4.00.

Narrow Gauge Railways of Europe, by Peter Allen and P. B. Whitehouse. 172 p., illus. (part Col.), maps. London, England, Ian Allen, $5.60.

National Transportation Policy—Preliminary Draft of a Report prepared for the Committee on Interstate and Foreign Commerce by the Special Study Group on Transportation Policies in the United States (pursuant to S. Res. 29, 151 and 244 of the 86th Congress), January 1, 1961. xx, 732 p. For sale by Supt. of Documents, U. S. Govt. Print. Off., Washington 25, D. C. $2.00.

The Organization for the Control of Surface Transport in Continental United States in a General War, by Paul J. Westhaeffer. iii, 46 p. Thesis No. 139, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington 25, D. C.

Overseas Railway—1960—A Railway Gazette Publication. 128 p., illus., maps. London, S. W. 1, England, 33 Tothill St. 7 shillings, 6 pence. Contents: Australia and New Zealand, Far East (Burma, Ceylon, Malaya, Pakistan, Thailand), Africa (Benguela, East Africa, Ghana, Nigeria, Nyasaland & Trans-Zambesia, Rhodesia, Sierra Leone, South Africa, Sudan), Europe (Coras Iompair Eireann), Americas (Canada, Argentina, Brazil, British Guiana, Jamaica).

Public Interest in Transportation Trends—Remarks by Laurence K. Walrath, Interstate Commerce Commissioner, at meeting of Southwestern Shippers Advisory Board, Galveston, Texas, Jan. 26, 1961. 19 proc. l. Washington 25, D. C., ICC Press Release. Printed in Southwestern Shippers Advisory Board Proceedings, Jan. 26, 1961: 21-23. Dallas 2, Texas, Room 200 Union Terminal Station. Free on request.

Reorganization of the Nationalized Transport Undertakings, by Ministry of Transport, Great Britain. 14 p., organization chart. London, England, Her Majesty's Stationery Office. 1 shilling.

Russian Locomotive Types, by J. N. Westwood. 87 p., illus., diagrs. Published by author at Oakleigh Close, Bachwell, Bristol, England. $1.85.

The Sandley Story, by Denis Rooksby. Foreword by Frederic Shaw. 1st ed., 1960. 27 p., illus. San Francisco 4, Calif., Hesperian House. $2.95. ". . . partly the story of the narrow-gauge iron ponies of the Riverdale and Great Northern Railway . . ."

The Seaway Story, by Carleton Mabee. xii, 301 p., illus., maps. New York, The Macmillan Co. $5.95.

Steam Gave Them Heart—A Short History of the Development of the Railroad Engine . . . from 1680 to the present new era in railroading . . . as told to The Atlantic Coast Line Railroad Company, Jacksonville, Florida. 8 p., illus. brochure. Free.

The Story of the Tralee & Dingle Light Railway, by Patrick Bruce Whitehouse in collaboration with A. J. Powell. iv, 76 p., illus., diagrs., maps. London, England, Locomotive Publishing Co., Ltd. $1.00.

A Study of the Feasibility of Using Propane and Natural Gasoline as Fuels for Railroad Locomotives—Final Report—SwRI Project No. 2-734-8 by Texas Research Institute, San Antonio to Texas & New Orleans Railroad Co., Houston. 30 l., illus., diagrs., graphs. Prepared by John M. Clark, Jr., SwRI and Michael Gogol, T&NO RR Co.

A Study of Western Maryland Railway Company, by Pierre R. Bretey. Dated Jan. 26, 1961. New York 4, N. Y. Hayden, Stone & Co. (35) p. tables. Free.

A Time of Adversity—And Courage 1861-1865, by Marshall L. Bowie. 16 p., illus. Atlanta, Ga., Atlanta & West Point, The Western Railway of Alabama, and Georgia Railroad. "A story of Montgomery and West Point Rail Road, a predecessor company of The Western Railway of Alabama and its activities during the War between the States." Free.

Transportation Economics of Mineral Commodities, by William A. Riggs, engineer, Resources and Industrial Development, Gulf, Mobile and Ohio Railroad Co., Mobile, Ala. 36 mimeo. p., map, graphs. Paper

presented at annual meeting, American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., St. Louis, Mo., Feb. 26 to March 2, 1961, and distributed by coupon only.

Transportation Museum . . . "the only museum of its kind in Japan." 16 p., illus. brochure. 25, 1-chome, Kanda Sudacho, Chiyoda-ku, Japan. Free.

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ARTICLES IN PERIODICALS

Canadian Transportation System—Vision of the Future, by Dr. O. M. Solandt. The Toronto Railway Club Official Proceedings . . . December 3, 1960: 11-23.

D. E. 2 Diesel-Electric Locomotives on the Rhodesia Railways, by G. E. South African Institute of Electrical Engineering, Johannesburg. Transactions, October 1960: 210-229. Illus., diagrs.

A Department of Transportation . . . Now or When? by James K. Knudson. National Defense Transportation Journal, Jan.-Feb. 1961: 32-36, 59-60. Chart of proposed organization.

Development and Work of the Railway Research Service 1924-1960, by C. E. R. Sherrington, Railway Research Service, British Transport Commission, London, England. Canadian Railway Club, Inc. Official Proceedings, Montreal, November 14 and December 12, 1960: 3-17.

The Development of the Steam Locomotive in Canada—Commemorating the End of Steam Locomotion on the Canadian National Railways. Upper Canada Railway Society Newsletter—Supplement to November 1960 Issue.

A Dutch Investor in Minnesota, 1866—The Diary of Claude August Crommelin, translated by A. Hermina Poatgieter; edited by Muriel E. Hidy. Illus. ". . . diary calls attention to two important factors that were influencing the state's development in the 1860s—his own nationality group and the pioneer railroads that were opening the country to settlement and providing access to markets for the farmer's produce. . . ." Minnesota History, December 1960: 152-160.

$8.9 Billion—The Federal Government's Estimate of Transportation Expenditures in Fiscal Year 1962, by Lewis W. Britton. Total, based on audit of budget submitted by President Eisenhower, includes all items identifiable as related directly or indirectly to the purchase, provision, promotion, development (research) and regulation of transportation by the Federal Government. Traffic World, February 25, 1961: 70-74.

1835-1960. 125 JAHRE DEUTSCHE EISENBAHNEN. Die Bundesbahn, 34. Jahrgang 21/22: 999-1171. Illus., part in color, maps and folding tables. A "collectors' item" in other fields besides railroad history.

Enter the E-44's—Pennsy's New Rectifiers Possess Diesel-Derived Design, by David P. Morgan. Illus. Trains, February 1961: 22-23.

The Evolution of Electric Traction Systems, by (Marcel) Garreau, chief engineer, Natl. Rys. of France. French Railway Techniques 1960:3: 129-134.

Final Days of a Famous 4-6-0, by R. V. Nixon. Trains, February 1961: 24-27. Northern Pacific's last steam locomotive, from service to sugar beets to scrap.

The First Diesel Railcars . . . "which began to run in 1912." Diesel Railway Traction, December 1960: 460-462.

Historical Sketch of the Grand Trunk Railway (to 1900). Upper Canada Railway Society Newsletter No. 179, December 1960—Special Supplement.

A Look at Railroad Motive Power, by O. R. Pendy, chief mechanical officer, Nickel Plate Road. Railway Materials and Equipment, November-December 1960: 14-19. Illus.

Mating Time for the Railroads, by Gilbert Burck. Fortune, January 1961: 114-121, 142, 144, 149-149a. Illus.

Mobile Minutemen, by Col. Kermit R. Pope. Railway Club of Pittsburgh. Official Proceedings January 19, 1961: 1-3.

Museum of Transport Wants Site on Riverfront in City. St. Louis Post-Dispatch, January 8, 1961: A3. "Will ask St. Louis to include sum for purpose in its proposed new bond issue."

New York Still Has A Steam Railroad—Photo-Story by David Plowden. Brooklyn Eastern District Terminal Railroad. Railroad Magazine, April 1961: 13-17.

150 Years of Henschel—"Largest continental locomotive manufacturer now wholly diesel and electric in the railway department." Diesel Railway Traction, November 1960: 434.

. . . A Pictorial History of Public Transportation in the East Bay, Commemorating the Achievement of the Past Century and the Commencement of Operations by the Alameda-Contra Costa Transit District (1863-1960). A C Transit. Transit Times, Oakland, California, October 1960 Special Issue. 33 p. Illus. Reprinted by Western Railroader "without public expense," November 1960. 50 cents a copy.

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Public Interest in Transportation Trends, by Laurence C. Walrath, Interstate Commerce Commissioner. Remarks at meeting of Southwestern Shippers Advisory Board, Galveston, Texas, Jan. 26, 1961, printed in Board's Official Proceedings, Jan. 26, 1961: 21-23. Copies free on request to Board's headquarters Room 200, Union Terminal Station, Dallas 2, Texas.

Quanah Means Quick, by Donald Sims. Trains, February 1961: 35-38. Illus. "Frisco influence dominates wholly owned Quanah, Acme & Pacific."

Questions in Company-Operated Transport, by Kenneth U. Flood. Harvard Business Review, January-February 1961: 127-135.

Railroad Exchange Delegation to the Soviet Union, by P. T. Garin, manager, Research and Development, Southern Pacific Company. Pacific Railway Club Proceedings, Oct.-Nov. 1960: 23-32.

The Railroads of China, by George S. Raskin. National Defense Transportation Journal, November-December 1960: 38-40, 58-59. Map.

Railway Systems and Procedures Association. Coordinating Transportation Procedures—The Problems, Typical Solutions and Systems. Its Proceedings of 1960 Spring Meeting, April 5-7, 1960, Chicago, Ill. (iv), 82 p., Illus. Chicago 7, The Association, 433 Grand Central Terminal. $5.00.

Russia: Distribution Without Competition, by C. D. Buford. Distribution Age, January 1961: 38-39, 62-63. Illus.

Santa Fe opens fast double-track new main line in Arizona. ". . . northern Arizona . . . eliminates tortuous mountain grades, sharp curves and a narrow tunnel . . ." Maps with brief text, printed in daily newspapers in Washington and elsewhere on March 14 and 15, 1961, copies of which are being pasted in Santa Fe histories in many libraries and homes. Apply to local Santa Fe Traffic Offices to learn whether reprints will become available, or write to General Freight Traffic Manager, Santa Fe System Lines, Chicago, Ill.

The Science of Transport, by K. W. C. Grand. Journal of the Institute of Transport, November 1960: 3-8.

"Seven Reports on Transportation Problems Agree as to 'Ills' But Differ on Solutions," by Stanley Hamilton and R. Stanley Chapman. Traffic World, January 21, 1961: 27-31. Principal features and recommendations of 1) Landis Report; 2) Doyle Report); 3) Oversight Report; 4) Practitioners' Report; 5) Booz, Allen & Hamilton Report; 6) McKinsey Report and 7) Woods Hole Report.

Sky-High Deal for a Sky Scraper. Fortune, December 1960: 140-143, 266-271. Illus., diagrs. Negotiations with Juan Trippe for Pan Am's lease in new building in New York's Grand Central Terminal area.

Sound Advice Adopted by a Progressive Commission. Traffic World, February 25, 1961: 5. Editorial praise of new measures adopted by Interstate Commerce Commission.

The Soviet Search for Super-power, by J. N. Westwood. Trains, January 1961: 26-36. Illus., Diagrs. "After the Revolution, innovation became compulsory."

Die Sowjetisierung des innerstaatlichen und zwischenstaatlichen Eisenbahnfrachtrechte in den europaeischen Ostblockstaaten, by Werner Pischel. Archiv fuer Eisenbahnwesen, 70: Jahrgang, Heft 4: 1960: 449-492.

The Sparkplug and the Rat Hole, by J. P. Lamb, Jr. and Bruce R. Meyer. Trains, January 1961: 18-24. Illus., Maps. "A fresh look at one of the most productive railroads in the United States"—Cincinnati, New Orleans & Texas Pacific Railway Co.

STANDARDIZATION . . . from the National and International Angle, by C. Martin; The Bureau of Standardization on the Railway (SNCF), by R. Tarbouriech; . . . for Coaches and Wagons, by L. Rimbaud; . . . of Internal Combustion Motive Power Stock, by C.

Tourneur; The Electric Locomotive and Standardisation, by F. Nouvion. French Railway Techniques 1960: 3; 139-160. Illus., diagrs.

Steam in the Philippines, by Thomas Walsh. Railroad Magazine, February 1961: 16-22. Illus. Locomotive roster.

Steam Locomotive & Railroad Tradition, December 1960: 6-7, East Broad Top by Night. Photos by John Krause; 9-11, *The World of the Short-Line.* Illus.; 12-20, Tremont & Gulf. Illus., Map. "This Louisiana forest products short-line was known for its classic steam power."

The Suddenly Famous Magma Arizona, by J. R. Knoll. Trains, January 1961: 37-39. Illus. "The short line that steamed out of obscurity."

Trains Goes Round the World I—, by David P. Morgan. Miss Millay's verse urges the editor aboard a 707. Trains, February 1961: 28-34. Illus. Continued in later issues until David Morgan returns to this country.

The Transport Snarl—Slow Motion in the Jet Age, by Charles E. Stonier, Assoc. Prof. of economics and marketing, Hofstra College. The Nation, January 28, 1961: 76-79.

Transportation Study, As Separate Field, On Wane In Many of Nation's Universities.—Report of a survey, Traffic World, February 1, 1961: 66-72.

Transportation's Challenge to the New Administration, by George P. Baker, professor of transportation, Harvard University Graduate School of Business Administration. 10 l. Outline of talk to Traffic Managers Conference of Southern California on November 30, 1960. Apply to the Conference, Los Angeles, Calif. or to B 133, Harvard University Graduate School of Business Administration, Soldiers Field, Boston 63, Mass.

Undersea Tunnels in Japan, by Akira Kanatani. Japanese Railway Engineering, December 1960: 3-6. Illus., Map.

U. S. Common Carrier Steam Power—Current Roster, compiled by Sy Reich. Railroad Magazine, February 1961: 56-64.

What I Saw of the Soviet Railroad System, by Frank R. Woolford. New England Railroad Club Official Proceedings, December 13, 1960: 68-75.

What's Ahead in Transportation? by Franklin George. Toronto Railway Club Official Proceedings, December 3, 1960: 25-31.

Roll That Big Top, a story of the circus is a feature of the May Argosy Magazine and was written by our member, Freeman H. Hubbard. Most of us thrill with the circus performers and this article should be of interest to many of us.

New Books

Erastus Corning, Merchant and Financier, 1794-1872, by Irene D. Neu. 212 pages, 9 x 6, frontispiece. Published by Cornell University Press, Ithaca, New York. Price $4.00.

Born in Norwich, Connecticut, with ten sisters and brothers, required to use crutches all his life on account of a fall from his crib, his work and energy made him one of the foremost citizens of the "Empire State."

At the age of thirteen he was employed by a mercantile house in Troy, N. Y. and from there, he went to Albany, formed his own partnership in the hardware business and made money. He was fortunate in his selection of partners but, he admitted he was less fortunate with his relatives.

He purchased the Albany Nail Factory and from that time on manufactured iron for local consumption and for the early railroads. Taking payment for same in part cash and part stocks or bonds, his investments broadened well outside of New York State. He was interested in the Mohawk & Hudson but was President for many years of the Utica & Schenectady R. R. Realizing that such roads as the Erie; Pennsylvania and Baltimore & Ohio each under a single management, could outstrip that line of railroads from Albany to Buffalo, Corning was the architect in the formation of the New York Central R. R. That he lost control of the road to Cornelius Vanderbilt was due to his own stubbornness in turning over the through business, both passengers and freight to the Hudson River steamers and, when navigation closed, to Vanderbilt and the Hudson River R. R. This irked Vanderbilt and he took control and reorganized both roads into the New York Central & Hudson River R. R.

Professor Neu has done a fine piece of work in portraying the life and interests of this distinguished citizen of New York State. Biographies such as this one make valuable additions to the men that made this country great and, we need more of them.

The Union Pacific Railroad, by Robert W. Fogel. 129 pages, 9 x 6. Published by The Johns Hopkins Press, Baltimore, Maryland. Price $3.50.

This is not a history of the Union Pacific, rather it is a study of the governmental legislation and how it affected that railroad. Ever since the Credit Mobilier scandal, the promoters of this road have been held responsible for the ruin of this worthy enterprise. The author has raised this point, and with considerable justness that its failure was due to the government policy rather than to the profiteering of the promoters. In the debate that followed, three schemes have been brought out by the author that would have been more efficient than the one under which the road was actually built: (1) the establishment of a corporation to which the government would have loaned $98,000,000 and private individuals subscribed $2,000,000. The government would have received six percent interest on the loan and half of the stock. (2) a private firm build the road, the government to guarantee the firm five or six percent.

(3) the government to build the road itself which would have cost about $57,028,272.00.

The author has presented a very interesting study of the various pieces of legislation as well as the individuals and how they affected this great undertaking.

The Last of Steam, by Joe G. Collias. 269 pages, 11 x 8, illustrated. Published by Howell-North, Berkeley, California. Price $10.00.

Returning from armed service duties in 1949, the author took to the road in order to capture and photograph the "iron horse" during its final effort. The author visited nearly all sections of this country in his effort to capture these photographs and this book is the result of his efforts. He wisely lets the photograph and its caption tell the story and, it is some story. His photographs will hold their own anywhere and are more realistic than many. An index in the back lists the road and locomotive number that are illustrated. If our members want a photograph gallery showing the last of our steam locomotives in action, then this book will easily fill that need. It is well worth the price.

The Crookedest Railroad in the World, by T. G. Wurm and A. C. Graves. 9 x 6, illustrated. Published by Howell-North, Berkeley, California. Price $3.75.

North of San Francisco, about half a mile high, stands Mt. Tamalpais and, from its top can be seen San Francisco, the Golden Gate and miles of country surrounding it. For thirty-four years it was the home of the Mt. Tamalpais & Muir Woods Ry., a road 8¼ miles long with 281 curves that made 42 complete circles. Powered by Shays and Heisler locomotives for the climb, you could come down by gravity.

For years the trip over the road with its breathtaking scenery, the visit to Muir Woods was a great attraction for tourists. The road pioneered in the use of oil burning locomotives and used a novel feed-water heater in the locomotive stack but, hard roads and the automobile made inroads on the number of passenger carried and, after 30 years of service, the road gave up.

The authors have given a very interesting account of this scenic railway and the hundred odd illustrations have added to the interest and value. I think a lot of us would prefer a ride on this road, if it were possible, than to use the highway.

The Thunder Lake Narrow Gauge, by Harvey Huston. 143 pages, 9 x 6, illustrated. Published by Harvey Huston, 860 Mount Pleasant St., Winnetka, Illinois. Price $7.50.

From 1893 to 1941 this little narrow gauge railroad served the lumber interests of Oneida, Forest and Vilas Counties of north-eastern Wisconsin and served them well. Prompted by low water in Pine Lake Creek for their log drive, the Robbins R. R. came into being in 1893. In 1898 the line became a common carrier and, in 1919 its owners sold out and it became known as the Thunder Lake Narrow Gauge R. R., one of the last in the Middle West.

With plenty of illustrations and the author must have combed the entire countryside for them, with an intimate knowledge of the men and

its lines, the author has presented a very interesting account of this little logging railroad.

Sierra Railway, by Dorothy Newell Deane. 181 pages, 9 x 6, illustrated. Published by Howell-North, Berkeley, California. Price $6.00.

The author of this book was the daughter of the engineer that built this railroad and her brother and husband were connected with it in various capacities.

Starting at Oakdale, California, where it connected with the Southern Pacific and Santa Fe Railroads, the Sierra started for the Mother-lode country and such towns as Tuolumme, Jamestown and others. Depending chiefly on the ores and concentrates from the mines, the road did no little business in grain, lumber and cattle. The road commenced operations in 1896 and is still in operation. Private railways branched from this road—Empire City Ry., Hetch Hetchy R. R., Pickering Lumber Co. and others all served as feeders. With William Crocker of the Southern Pacific as a backer, the road was assured of good treatment from that road. Another backer was Prince Andre Poniatowski of Poland, a resident of California. Twenty-four locomotives were owned by the Sierra Ry., all are listed and appear next to the index.

This book is more than a history of this railroad. Thanks to the intimate knowledge of the author of the people and places in the towns served by this road, we have a good cross section of the times and manners of this period. This has been wisely injected with the story of the railroad, add to this the large number of interesting photographs and the story is pretty well completed. In the opinion of this reviewer, William Hamilton Newell, the engineer, would be proud of the literary efforts of his daughter.

In Memory of

F. Achard
Annual Member
92 Ave. Mozart, Paris (16), France
Who Died on June 23, 1959

Robert F. Coggeshall
Annual Member
111 Union St., Schenectady (5), N. Y.
Who Died on March 20, 1960

Frank G. Coughtry
Annual Member
415 Lawn Ridge Road, Orange, N. J.
Who Died in 1960

Ben W. Griffiths
Annual Member
1338 Commerce St., Longview, Wash.
Who Died on July 6, 1960

Mathew Kime
Annual Member
8 North Sixth St., Stroudsburg, Pa.
Who Died on May 13, 1960

C. Howard Nash
Annual Member
North Bennington, Vermont
Who Died on Dec. 19, 1960

Fred C. Ripley
Annual Member
3315 West Adams Blvd., Los Angeles, Calif.
Who Died on April 11, 1960

James Warnock
Annual Member
179 Burrill St., Swampscott, Mass.
Who Died on August 27, 1960

William G. West
Annual Member
Sparta, New Jersey
Who Died on July 7, 1960